

APPENDIX E

POWDER RIVER GAS – COAL CREEK POD ENVIRONMENTAL ASSESSMENT AND MPDES PUBLIC COMMENTS AND RESPONSES

This appendix to the Decision Record contains the comments on the July 19, 2004 environmental assessment (EA) and the agencies' response to those comments. A written response has been prepared to all substantive comments and is presented below. A substantive comment is one that requests clarification or more discussion, gives new information, questions analytical techniques, or suggests new alternatives. Other comments were considered in completing the EA and preparing the Decision Record/FONSI, but did not receive a written response.

Similar comments have been grouped together where possible to create comment statements that capture the substance of two or more comments. Therefore, comment statements may not be exact quotes of any one person or organization. Comments have been edited for brevity and clarity. The numbers in parenthesis at the end of each comment statement are keyed to the individuals or entities that made that particular comment as shown below in Table 1.

Table 1 – Commenter and Number.

Commenter	Number
National Trust for Historic Preservation	1
Montana Historical Society	2
Montanans for Responsible Energy Development	3
Miles City Area Economic Development Council, Inc.	4
Beth Kaeding	5
Terry Punt and Bones Brothers Ranch	6
Charlene M. Woodcock	7
Montana Preservation Alliance	8
Powder River Gas, LLC	9
Montana Environmental Information Center	10
Walter J. Taylor and Lila V. Taylor	11
Mark Fix	12
Michael Reisner, Northern Plains Resource Council and T&Y Irrigation District	13
Bill and Judy Musgrave	14
National Trust for Historic Preservation	15
Fidelity Exploration & Production Company	16
Northern Cheyenne Tribal Historic Preservation Office	17
Geri Small, President, Northern Cheyenne Tribe	18
William Walksalong, Northern Cheyenne Councilman	19
U.S. Environmental Protection Agency, Region 8	20
John Rogers	21
Wade Sikorski	22
Russell Blalack	23
Starshine	24

The comments are grouped by subject matter following the EA organization where possible. Responses immediately follow each comment with corresponding changes made in the EA where appropriate.

Process

This section includes comments related to the scope of the EA; public or landowner involvement; and other procedural questions related to POD processing or EA preparation.

1. **Comment:** Under the National Environmental Policy Act (NEPA) regulations, connected actions and cumulative actions must be considered within the scope of the proposal (§1508.25). The connected action in this case is the fact that while these 16 wells are described as "exploratory," they are most likely a prelude to "production" wells. The BLM needs to examine the consequences of actual production as well as exploration for this project before deciding whether the benefits outweigh the damage. The Montana Statewide Oil and Gas Environmental Impact Statement (MT EIS) predicts that as many as 26,000 coal bed methane wells will be drilled in Montana. The impacts from production wells will be far greater on the resources of the area than exploratory wells. Analyzing the "exploratory" wells only in this EA appears to be piecemealing of the project. Powder River Gas has over 60 leases in this area, which will more than likely involve drilling of additional wells in the near future. The Project is part of PRG's efforts to develop its leases in Montana. The agencies need to disclose the entire lease acreage held by PRG in the Project area. This could potentially mean over a thousand wells. This is the same approach that the agencies have taken for Fidelity's CX field that continues to expand and be evaluated in a piecemeal approach. This approach fails to address cumulative impacts of projects and does not allow for any meaningful planning or mitigation of impacts. This is also the case for cumulative actions. Many other similar proposals for this area are coming from other companies. If each one is addressed in this manner, the totality of the watershed impacts from coal bed methane development is made to seem less than it will be. (5, 6, 7, 10, 13)

Response: The proposal before the agencies is only for exploration drilling and testing at eight locations. While the exploration drilling and testing results *may* be of such character that the operator decides to propose commercial production from these wells, or drilling of additional wells, it is not at all certain or automatic that would be the case. Nor could such production proceed without the operator submitting a proposed POD for production to the agencies for review and environmental analysis under NEPA. Site-specific production-related impacts from these well locations will not escape environmental review—they are just not ripe for consideration (40 CFR 1508.28(b)).

Regarding cumulative impacts, the agencies have undertaken analysis on two fronts to ensure that cumulative impacts are fully considered and "*piecemealing*" of the analysis does not occur. At the planning level, the Montana Statewide EIS analyzed the potential for Coal Bed Natural Gas development on a regional basis (including the Powder River Gas project area and lease holdings). That EIS concluded that there was the potential for 26,000 wells to be developed over the next 20 years and arrived at the present management plan that BLM is following to mitigate potential environmental impacts (2003 ROD). The second approach being used to address cumulative impacts is at the project level. The present Powder River Gas Coal Creek EA does in fact include analysis of potential impacts from hypothetical commercial production at the exploration well locations as part of the cumulative impacts analysis in each resource section of Chapter 4. Because production has not been proposed the analysis is speculative, but was prepared in order to look for potential impacts or mitigation needs should these locations ever be proposed for production. In addition, the EA tracks all wells drilled to date and compares them to the total number of wells analyzed in the Statewide EIS to ensure that the cumulative impacts of all CBNG development projects do not exceed the analysis in the Statewide EIS (EA Section 2.3.3).

The agencies recognize that CBNG production, like most mineral development, is inherently a step-by-step enterprise requiring operators apply a phased approach from prospect evaluation to exploration and testing, through actual development and production. We believe that the environmental analyses conducted at the regional planning level in conjunction with the site-specific reviews ensures that cumulative impacts do not escape review while providing for focused analysis and decision making at the appropriate development phase.

2. **Comment:** The EA admits that if commercial quantities of gas are encountered, then PRG will proceed with development of the resources. EA-22 states that gas will be carried from wells to the battery site. Production is reasonably foreseeable. The CEQ regulations state that significance "cannot be avoided by breaking an action down into small component parts." 40 C.F.R. §1508.27(b)(7). PRG owns more than 69 other federal leases in the project area and additional private and state leases. The BLM needs to consider the impacts of the full field development of PRG's entire lease acreage in the Tongue River watershed in an EIS instead of breaking the project into exploration and production. (13)

Response: At the regional planning level CBNG production for the entire area (including all of the Powder River Gas federal leases) has already been analyzed in the Statewide EIS. Because exploration often does not lead to

production, it is not appropriate to do site-specific-full field development analysis for a proposal at the exploration stage, or even at the advanced exploration stage. Such an analysis would be too speculative to be useful in identifying and mitigating site-specific impacts.

Commercial production for the Powder River Gas project is only reasonably foreseeable if the operator determines the testing results are successful. The operator would then have to submit another POD for review and environmental analysis. The environmental analysis prepared for any production POD would of course include an assessment of all the past impacts from exploration, impacts from proposed production operations, and relevant cumulative impacts from other area activities. If after considering the effectiveness of mitigating measures these impacts exceeded the significance threshold at 40 CFR 1508.27, an EIS would be prepared. The "significance" of the entire project would be considered when making this determination in accordance with §1508.27(b)(7).

- 3. Comment:** Why was the Tongue River Railroad (TRR) project not included in the cumulative projects? The EIS on the TRR is supposed to be released to the public sometime soon. Surely, the BLM and the various Montana regulatory agencies know about this massive project. From examining maps of both projects it appears that there will be some "overlap" of these projects. The route of the proposed Western Alignment goes very close to two of the proposed wells. In this area the railroad proposes to move 1 million cubic yards of dirt per mile. The dirt moved in this area could very well make development in this area impossible. The cut and fills could very well consume all of this area and make it impossible to even build the water treatment plant as well as drill the wells in this area. The EA fails to mention the railroad or its impacts. The railroad and associated coal production will exacerbate air pollution, water pollution, and impacts to wildlife, the very same impacts BLM has ignored here. Will the BLM consult with the Surface Transportation Board and look at the studies done in the TRR EIS before making a final decision on development in this area? (5, 10, 12, 13)

Response: The TRR has been added to the Reasonably Foreseeable Future Actions, section 2.3.3, of the EA. Although the PRG project is near or adjacent to the proposed TRRC Four Mile Creek and Western Alignment routes, the two projects would not be constructed or operated simultaneously. The PRG exploration project would be completed within 6 months after project approval, which would be in advance of a final decision regarding the proposed Western Alignment route and any construction associated with TRR. Because impacts from the two actions would not occur in the same area at the same time, no cumulative impacts are anticipated to occur from the TRR and the PRG POD.

CBNG exploration can proceed in the project area independent of plans for the TRR. If the TRR project progress further; the FEIS analysis of the TRR Western Alignment would be expected to include consideration of CBNG activities, specifically the PRG proposal, as part of its cumulative impact analysis.

- 4. Comment:** On page 7 of the EA other relevant documents are listed. The EIS's listed are currently under litigation and since this EA is tiering to these documents any actions regarding this development could be suspended pending the legal actions of the other environmental documents. (12)

Response: Although some decisions based on the environmental documents listed in EA Section 1.2.1 may be under litigation, the documents are still considered valid and may be referenced or tiered to by the agencies when preparing subsequent analysis. In the event of an adverse ruling on the adequacy of these documents, the effect on actions that tiered from or referenced those documents will depend on the nature of the ruling and the relief granted.

- 5. Comment:** The EA referenced by the DNRC is in regard to water rights to use water at Spring Creek and Decker mines. These water rights are being contested and the water rights may be altered before the Powder River Gas EA is complete. Fidelity Exploration has revised this water right and are including it with an over arching water right which explores several options for obtaining water rights. Will this EA be modified to reflect the changes that will be required in the EIS's and water rights? (12)

Response: The EA analyzes the effects of the proposed action and alternatives on water quantity but will not determine who owns water rights or whether a particular action infringes on a particular party's water rights. The operator is responsible for acquiring any and all rights, permits, or licenses necessary to implement the approved POD. Nothing in the approval conveys or validates any water rights or rights to any other property. Reference to the EA's prepared by DNRC for beneficial use of produced water at the Spring Creek and Decker Coal Mines, has been removed from the Powder River Gas – Coal Creek EA, because they would not be considered Relevant Documents to this analysis.

6. **Comment:** On page 14 the EA states that the water in the containment ponds may be used beneficially. Has Powder River Gas applied for a water right? (12)

Response: The State of Montana has determined the CBM produced water to be a waste product, not subject to a water right. Presumably the operator is the owner of the waste water and can use it for any lawful purpose before any excess is available for appropriation by others. DNRC's Final Order establishing the Powder River Basin Controlled Ground Water Area, Conclusions of Law, sections 3 and 4 explains use of produced water and is cited below: <http://www.dnrc.state.mt.us/wrd/home.htm>

3. With this designation of a controlled groundwater area the withdrawal of groundwater associated with coal bed methane production will be under the prior jurisdiction of the Montana Board of Oil and Gas. However, water rights matters and hydrogeologic issues are not within the ordinary technical expertise and area of concern to the Board. These are matters ordinarily dealt with by the Montana Department of Natural Resources and Conservation and the Montana Bureau of Mines and Geology. The Montana Department of Natural Resources may petition the Board for hearings in regard to the production, use, and disposal of water from coal bed methane development wells that could effect existing water rights in the area based upon information gathered concerning water withdrawals.

4. This controlled groundwater designation will not affect regulation of new water rights for conventional water uses. If local interests wish to acquire water rights to wells constructed during coal bed methane development, a beneficial use permit will be required. Standard exceptions to permit requirement will still apply. For example, a permit will not be required for appropriations of 35 gallons per minute or less and not exceeding 10 acre-feet per year on wells developed for beneficial use. Laws for ground water withdrawals that do not require a water use permit such as conventional oil and gas activities, mining, or agricultural drainage, will remain in effect as in other parts of the state.

Accordingly, it is our understanding that PRG will not be filing for an Application for Beneficial Water Use Permit. Water appropriated with this exception will be used for dust abatement, drilling activities, vehicle washdowns and associated well construction activities. All wells will be equipped with totalizers to ensure compliance with the Final Order. At this time PRG does not intend to file for appropriations for livestock or irrigation. Filing for appropriations for livestock or irrigation, or any other beneficial use will be the responsibility of the individual landowners. The EA has been modified to reflect this determination.

7. **Comment:** On EA page 8 the BLM is stating that section 401 certification is being waived because a MPDES discharge permit is required. Can a state regulation override a federal law? Wouldn't a 401 certification still be required? (12)

Response: Section 401 of the federal Clean Water Act states that no federal license or permit shall be granted until section 401 certification is obtained or has been waived by the State. Therefore the federal statute anticipates state waiver under the appropriate circumstances. The Board of Environmental Review has adopted rules [ARM 17.30.101 et seq.] to clarify under what conditions the Department may waive certification and to involve the public in the decision making process.

- 8. Comment:** On page EA page 15, 16 and 23 reclamation is discussed. Is there a bond to cover all reclamation? The EA needs to estimate reclamation costs and evaluate whether PRG's performance bond is adequate to cover such costs. See Exhibit K, Exhibit M. (12, 13)

Response: The operator is required to provide a bond to ensure compliance with all terms and conditions of a lease hold, including timely plugging, reclamation of the surface and payment of royalties. The bond amount posted by Powder River Gas is \$25,000.00. The bond is just one part of BLM's compliance program to ensure performance of the reclamation plan in the approved POD. The bond is not an environmental mitigation measure in itself. As such, analysis of the reclamation costs and bond amount is not appropriate to include in the EA. What is analyzed in the EA is the adequacy of the reclamation plan that will be implemented to mitigate environmental impacts from the PRG's exploration activities.

- 9. Comment:** On page 19 no quantity of wells is submitted for the Pond Creek proposal and the Deer Creek proposal. How can an analysis be done on this EA without knowledge of the quantity of wells proposed on these projects? (12)

Response: The Pond Creek and Deer Creek projects are only reasonably foreseeable actions that have not yet even been proposed to either the BLM or the MBOGC. As such, the number of wells is not known. At this time the analysis of these hypothetical future actions has to be done at a conceptual level to ascertain the potential for cumulative impacts when considered in combination with the proposed action and alternatives. If and when these projects are actually proposed they will be ripe for detailed environmental review, including reassessing any potential for cumulative impacts.

- 10. Comment:** EA page 16. All of Section 2.3 is very vague. This section should list potential sources contributing to cumulative effects. Potential sources of impacts include: PPL Montana Power Plant, Rosebud Power Plant, Hardin Power Project, Round-up Power Project, Rosebud Mine, Sarpy Mine, Decker Mine, Spring Creek Mine, Absaloka Mine, Proposed Otter Creek Mine, all proposed CBNG developments such as Badger Hills Project, and Hanging woman Creek Projects. All of these developments are currently or will be emitters affecting Air Quality and Increment Consumption. Studies have already shown that the Proposed Round-up Power Project alone will significantly impact the Northern Cheyenne Class I Air Shed. (18)

Response: Section 2.3 has been revised to identify the types of cumulative impacts from each of the actions listed in this section. Not all projects listed would impact all resources. In fact, most of these actions only impact one or two resources. Air quality conditions are the result of regional, multi-state activities and it is not possible to list all actions that may be contributing to cumulative air quality impacts. However, assumptions used in the air quality modeling effort completed for the FEIS captured the effects from these widespread activities.

The proposed project would not require a MAQP and ambient air quality modeling would not be required. Emissions from the proposed project would be minor and temporary. The air quality portions of the EA have been revised to include emissions from each of the alternatives considered. If future development (installation of compressor engines, generators, etc.) is proposed and the future project requires a MAQP, ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis would be required.

- 11. Comment:** Section 2.3.1 should be titled "2.3.1 Relevant Past and Current Actions". Past actions implies that the operations are no longer in existence and are not currently having an effect on the environment. (18)

Response: Section 2.3 of the EA states that cumulative actions have the potential to create effects "overlapping in time" with the effects of the proposed action. Therefore, all operations listed in Section 2.3.1 are currently in existence and having some effect on the environment that may contribute to cumulative impacts.

12. Comment: EA Section 2.3.2. Section 2.3.2 should be included in above section with revised title. This section in general needs to address all of the aforementioned development activities in its analysis of cumulative effects. (18)

Response: The terms “past”, “present”, and “reasonably foreseeable” were chosen to be consistent with the definition of *cumulative impacts* found in 40 CFR 1508.7.

13. Comment: Did the agencies provide private landowners within and adjacent to the project area with a copy of the EA by mail? (13)

Response: The three private landowners where this project is located were provided a hard copy of the EA. The EA was also posted on the agency website and a press release was issued advising the public that the EA was available for comment. Individuals, other than the three landowners, were not mailed copies of the EA unless they requested a hard copy.

14. Comment: The agencies have failed to comply with their obligation to collect baseline surface water quality data and baseline data on aquatic life or baseline information on suitable geologic formations for injection pursuant to 40 CFR §1502.22. (13, 23)

Response: The baseline information already available, in conjunction with inventories provided by the operator, was adequate to analyze the proposed action and alternatives presented in the EA. The cited section of the NEPA regulations at §1502.22 applies to “foreseeable significant adverse effects” in an EIS that is “essential to a reasoned choice among alternatives.” Neither of those conditions is applicable to the Powder River Gas exploration POD.

15. Comment: Nowhere in the EA do the agencies address the issue of whether there are significant affects on the human environment that require an EIS to analyze. The agencies need to consider the significance factors and evaluate whether the impacts from the proposed project when combined with the impacts of other past, existing, and reasonably foreseeable future projects trigger any of the CEQ factors. (13)

Response: The purpose of the EA is to identify the impacts of the proposed action and alternatives on the environment. A “significance determination” is not typically made in an EA as the task is simply to describe the impacts in an analytical manner. The Decision Record is the place where a determination of significance is made based upon the results of the EA. In this case, a FONSI (Finding of No Significant Impact) is included in the decision along with rationale explaining why the selected alternative was found to have no significant affects on the human environment that would require an EIS be prepared.

16. Comment: While a wildlife monitoring plan is "being prepared," I believe the public should have the opportunity to see that plan. The POD and EA do not include the WMPP or even provide a description of such plan. (5, 13)

Response: The Wildlife Monitoring and Protection Plan (WMPP), which was developed as part of the Final Statewide Oil and Gas EIS, is an overall, umbrella document which specifies the types of monitoring that will be required for CBNG development. There was a great deal of public involvement in the development of the WMPP. The POD (including the WMPP) was submitted to BLM on April 15, 2003, and received in Miles City on April 18, 2003. Baseline surveys were conducted and subsequent CBNG monitoring includes this project area. The WMPP for the PRG Coal Creek Project was included with the POD, but not included as an appendix to the EA.

17. Comment: I would like to state for the record that the Northern Cheyenne Tribe is very disappointed and concerned with the coordination between the State of Montana and the U.S. Bureau of Land Management on this project. It was very unclear as to what the purpose of today's hearing actually was. The notice issued by the State Department of Environmental Quality indicated that the purpose of today's hearing was to collect public comment with regards to the proposed permit, the statement of basis and the Environmental Assessment. However, the

notice issued by the U.S. BLM indicated that today's hearing was to receive comments related to the State's proposed MPDES permit. (19)

Response: We apologize for any confusion. The hearing was scheduled by DEQ to receive comments on the MPDES permit and related documents. The EA is one of the related documents because it is the Montana Environmental Policy Act (MEPA) analysis of the MPDES permit in addition to being the BLM's NEPA analysis of the operator's POD. All types of comments on the EA and MPDES permit documents were accepted at the hearing.

18. Comment: There is concern about the Water Well Mitigation Agreements, which Powder River Gas has offered to adjacent water rights holders. The water rights holders have not signed some of these agreements. No water well mitigation has been offered to area ranchers. The agreement that Powder River Gas has offered to these water rights holders do not adequately address the problem of well and spring impairment for these wells or future wells which these people may want to develop. How will the DEQ and Montana DNRC resolve this issue? The Controlled Ground Water Designation says that these folks must be offered a well mitigation agreement, but what if this agreement is not satisfactory to the holders of these water rights? This project should not be approved until Powder River Gas has signed water well mitigation agreements with all the area's affected landowners. (5, 6, 7, 12, 13, 23, 24)

Response: A Water Well Mitigation Agreement has been provided by PRG to all affected parties, with certification to the BLM dated November 19, 2004. The EA has been changed to reflect the recent agreements. Please refer to DNRC's Final Order establishing the Powder River Basin Controlled Ground Water Area, Order, # 3.
<http://www.dnrc.state.mt.us/wrd/home.htm>

3. Water Source Mitigation Contract

Coal bed methane operators must offer water mitigation agreements to owners of water wells or natural springs within one-half mile of a CBM field proposed for approval by the Board or within the area that the operator reasonably believes may be impacted by a CBM production operation, whichever is greater. This area will be automatically extended one-half mile beyond any well adversely affected. The mitigation agreement must provide for prompt supplementation or replacement of water from any natural spring or water well adversely affected by the CBM project and shall be under such conditions as the parties mutually agree upon. Mitigation agreements are intended to address the reduction or loss of water resources and may exclude mechanical, electrical, or similar loss of productivity not resulting from a reduction in the amount of available water due to production from CBM wells. The areas covered by mitigation agreements will be considered in review of field development proposals. The TAC will make recommendations to the Board of Oil and Gas Conservation if it identifies a need to increase the required mitigation area.

19. Comment: We were offered a water well mitigation agreement by Powder River Gas on August 26, 2003, not August 15, 2003, as stated on pg. 12 of the EA. We refused to sign this agreement because it was not protective of our rights. Our lawyer countered with a more stringent agreement on September 26, 2003. We heard nothing more from their agent, Western Land Services, until about two weeks ago when they started calling and wanting to meet with us. To date, we have not signed a water well mitigation agreement with Powder River Gas. (14)

Response: A Water Well Mitigation Agreement has been provided by PRG to all affected parties, with certification to the BLM dated November 19, 2004. It is our understanding that PRG and the Musgrave's have reached an agreement, with PRG agreeing to Musgrave's conditions. These conditions are consistent with state statutes and include a 2-mile radius of influence.

20. Comment: EA-41 states that "the Operator has certified that for each well "all potentially affected landowners having existing water wells within the circle of influence for the proposed well will be offered a Water Well Agreement." This is in compliance with the requirements of the Powder River Basin Controlled Groundwater Area." The EA fails to discuss other, more stringent requirements passed by the 2001 Montana Legislature. (13)

Response: It is assumed the above comment is referencing the more stringent requirement of the one-mile radius around the well, and 1/2 mile from any impaired well. PRG has obtained the Water Well Agreements and complied with this requirement. The Statute has been attached below:

82-11-175. Coal bed methane wells -- requirements.

(1) Coal bed methane production wells that involve the production of ground water must comply with this section.

(2) Ground water produced in association with a coal bed methane well must be managed in any of the following ways:

- (a) used as irrigation or stock water or for other beneficial uses in compliance with Title 85, chapter 2, part 3;
- (b) reinjected to an acceptable subsurface strata or aquifer pursuant to applicable law;
- (c) discharged to the surface or surface waters subject to the permit requirements of Title 75, chapter 5; or
- (d) managed through other methods allowed by law.

(3) (a) Prior to the development of a coal bed methane well that involves the production of ground water from an aquifer that is a source of supply for appropriation rights or permits to appropriate under Title 85, chapter 2, the developer of the coal bed methane well shall notify and offer a reasonable mitigation agreement to each appropriator of water who holds an appropriation right or a permit to appropriate under Title 85, chapter 2, that is for ground water and for which the point of diversion is within:

- (i) 1 mile of the coal bed methane well; or
- (ii) one-half mile of a well that is adversely affected by the coal bed methane well.

(b) The mitigation agreement must address the reduction or loss of water resources and must provide for prompt supplementation or replacement of water from any natural spring or water well adversely affected by the coal bed methane well. The mitigation agreement is not required to address a loss of water well productivity that does not result from a reduction in the amount of available water because of production of ground water from the coal bed methane well.

History: En. Sec. 4, Ch. 578, L. 2001; Sec. , MCA 2001; redes. by Sec. 1, Ch. 117, L. 2003.

21. Comment: The EA needs to include a copy of the water well agreement being offered to landowners and evaluate its effectiveness at mitigating drawdown impacts on wells and springs. For example, the EA concludes that drawdowns will extend beyond the project area. Have all landowners within the zone of predicted drawdowns been offered a water well agreement? If not, what are the potential impacts of drawdowns on their wells and springs in the absence of such an agreement? What would the landowners remedy be if PRG's methane operations adversely impact their wells and springs? What are the impacts of the loss of such wells and springs on farming and ranching operations? (13, 24)

Response: DNRC's Final Order establishing the Powder River Basin Controlled Ground Water Area provides a description of landowner remedies in the event of water loss. <http://www.dnrc.state.mt.us/wrd/home.htm>

The EA does not include a copy of any water well mitigation agreements. These are a matter between PRG and the affected landowners that are not public information. Additionally, no impacts are expected to any existing wells or springs, as a result of this exploration project. Please review the hydrological analysis in Chapter 4 of the EA, for further explanation.

22. Comment: When mitigating an affected domestic well, it is possible that re-drilling the well deeper could tap water of poorer quality than the well owner was using originally. There may also be increased energy costs with pumping from a deeper well. There are also possibilities that liberated methane could enter domestic wells. Mitigation should also include water quality and economic issues in addition to quantity. (18)

Response: Potentially affected water wells have been provided with a water well mitigation agreement. That agreement between the landowner and operator should cover potential increased costs or changes in quality where those factors are of concern to the landowner.

23. Comment: As neighbors to this development, we have never been contacted regarding our concerns about the subject development. Our stockwater for this portion of the ranch (T7S, R40E) is comprised of a system of developed springs on Post Creek, Monument Creek, and Leafrock Creek. If the springs go dry and we are required to drill wells - who will pay and continue to pay into the future to provide water to the area? (11)

Response: The three private landowners where this project is proposed were contacted and consulted, regarding the project's design and location. The adjacent landowners, who had water wells or water rights on a spring development within one mile of the proposed CBM well were contacted by PRG to negotiate a water source mitigation agreement. These agreements were only offered to owners of water wells or developed springs, within a one mile radius of the proposed CBNG wells in accordance with Montana law.

Due to the nature of the proposal before the agencies, the project is only for exploration drilling and testing at eight locations (16 new and 2 existing wells); a drawdown in groundwater is not anticipated to extend beyond 1.11 miles of the project area. While the exploration drilling and testing results *may* be of such character that the operator decides to propose commercial production from these wells, additional pumping of coal zone water, or drilling of additional wells, it is not at all certain or automatic that would be the case. Nor could commercial production proceed without the operator submitting a proposed production POD to the agencies for review and environmental analysis under NEPA. Essentially, any long term gas and water production, which would increase the likelihood of well and spring water depletion, will be analyzed if and when a proposal for CBNG production is received.

24. Comment: On page 12 under Surface Use, the EA discusses surface use. Will the BLM continue with development if a surface use agreement or water well agreement cannot be obtained? These are private water rights and private surface. Will the BLM take a dictatorial role and proceed with development over the wishes of the surface and water rights holders? Does the BLM plan to bond onto this property? (12)

Response: BLM approval of the POD cannot grant the operator any rights to surface or water resources. The operator is responsible for obtaining all necessary use agreements that may be needed to implement their approved POD. PRG has certified that they have obtained the surface use agreements required for the Coal Creek exploration POD and all necessary water well and spring mitigation agreements, dated November 19, 2004.

PRG has obtained the surface use agreements from the surface owners in the Coal Creek Exploration POD area. As a result, PRG is not required to bond under the requirements of 43 CFR §3814.1(c) or (d).

25. Comment: On page 15, Alternative C, it states all wells and associated infrastructure are proposed on private surface. Have surface agreements been obtained? (12)

Response: PRG provided certification on July 28, 2004 that a surface use agreement has been reached with the private surface owners in accordance with the requirements of Federal Oil and Gas Onshore Order No. 1.

26. Comment: PRG submitted its APDs on August 18, 2003, and the BLM completed its site inspections on September 16, 2003. Onshore Oil and Gas Order 1 and BLM regulations require that interested parties, including landowners in split-estate situations, be invited on the inspection. Where such landowners invited? Were landowners adjacent to the project invited? (13)

Response: The three private landowners where this project is proposed were contacted and consulted, regarding the project's design and location. Although invited, only one owner briefly met with the team, but had no concerns; the others declined to attend the site inspections held on September 16, 2003. Landowners adjacent to the project were not invited to attend these field inspections.

27. Comment: Onshore Order 1.III.B.2 requires the BLM to consult with appropriate interested parties upon the initiation of the APD process. Please describe the steps taken by BLM to notify surface owners, who are clearly interested parties, within and adjacent to the project area in August of 2003. Order 1.III.B.2 also requires the BLM to involve interested parties, including surface owners, on the site inspection that took place on September 12, 2003. Please describe the steps taken by BLM to involve the surface owners within and adjacent to the project area in the site inspection. Please provide evidence that the surface owners were invited to participate in the onsite inspection as required by Order 1.III.B.2. Please describe the specific surface use and reclamation stipulations that the BLM developed during the onsite inspection as required by the Order 1.III.B.2. (13)

Response: Because the operator has offered and entered into surface owner use agreements that include surface compensation and reclamation practices with the surface owners, the BLM defers to these agreements and lets the operator take the lead in surface owner contact and permission for access to the field sites.

The three private landowners where this project is proposed were contacted and consulted, regarding the projects design and location. Although invited, only one owner briefly met with the BLM and the operator onsite, but had no concerns. The others declined to attend the site inspections on September 16, 2003. Adjacent landowners to the project were not invited to attend these field inspections.

On May 12, 2004, BLM contacted the surface owners by phone to further discuss the details of the proposed project. The BLM conducted this consultation to discuss the proposal submitted by the company, answer any remaining landowner questions, assure the surface use agreement was adequate to meet the landowners' needs, and to assure any concerns the landowner had were conveyed to the operator and considered in the environmental analysis.

Finally, during the inspections of the proposed locations, all areas of proposed surface disturbance were inspected to evaluate potential impacts to natural resources and surface owner assets and land uses. The pipeline from the Long Federal 5-6 well was moved to reduce surface disturbance during the field inspection. The BLM concurred on the remaining locations and facilities, designed by the operator with the private surface owners consent.

28. Comment: Onshore Order 1.III.G provides that that authorized officer may require the submission of reclamation plan between the operator and landowner in order to determine if it is adequate to protect nearby federal surface from significant impacts generated by the operation. Please explain whether Powder River Gas has negotiated a reclamation plan with the private landowners within the project area. Northern Plains requests that the BLM exercise its discretion and request Powder River Gas to submit any such reclamation plans with private landowners and review them for their adequacy. (13)

Response: See 2.2.3 Alternative C—Proposed Action with Mitigation: *Agencies Preferred Alternative*, for a detailed description of the operator's reclamation plan. PRG has obtained a surface use agreement with the private surface owners, which includes reclamation measures. In consultation with the surface owners on May 12, 2004, it was indicated to the BLM that the surface use agreements were acceptable and adequate to protect the surface owners' rights. The surface owner can at the time of the on-site visit request that specific items be made part of the Surface Use Program, which BLM may include in the Surface Use Program if determined beneficial to the development of the lease and consistent with conditions of approval that BLM would employ. No specific items were requested by any of the surface owners. BLM is satisfied with the reclamation plan provided by PRG. That being the case, there is no need for PRG to submit these plans separately to BLM or BLM to review the adequacy of the reclamation measures included in PRGs' agreements with private surface owners.

29. Comment: Onshore Order 1.III.G.4.b.(4) requires the operator to show the location of all wells pads and ancillary production facilities in the event production from the lease occurs. Neither Powder River Gas's APD nor its Plan of Development identifies the location of such production facilities. Why not? The BLM must require Powder River Gas to identify the location of production facilities including additional power lines, compressor stations, and gas transmission lines before approving the APDs or POD. (13)

Response: Because the proposal before the agencies is only for exploration drilling and testing at eight locations, there are no production facilities to show or consider in the analysis. Onshore Order 1 does not require the operator

to submit this information if it is not known and cannot be accurately presented as is the case with PRGs' proposal. While the exploration drilling and testing results *may* be of such character that the operator decides in the future to propose commercial production from these wells, or drilling of additional wells, it is not at all certain or automatic that would be the case. As required by Onshore Order No. 1, such production would not proceed without the operator submitting a proposal for production that shows the location of all production facilities as you suggested to the agencies for review and environmental analysis.

30. Comment: Please describe the status of Powder River Gas's negotiations with all affected owners of private surface impacted by the project and compliance with these requirements. If PRG intends to post a sufficient bond, please describe how PRG has complied with the requirements of 43 C.F.R. §3814.1(1)(c); (d). If PRG has posted a bond, please describe how the BLM has determined that the bond is sufficient to ensure compliance with the MLA and SRHA and explain how the BLM independently determined the minimum amount necessary to cover adverse impacts to damage to crops, damage to tangible improvements, loss of grazing land, and adverse water impacts. (13, 21, 22)

Response: PRG has obtained the surface use agreements from the surface owners in the Coal Creek Exploration POD area. As a result, PRG is not required to bond under the requirements of 43 CFR §3814.1(c) or (d).

31. Comment: The EA needs to discuss the legal ramifications of approving methane development when water well mitigation agreements have not been signed with landowners holding vested property rights to wells and springs. (13)

Response: A discussion on "legal ramifications" of any action is outside the scope of the EA. The EA analyzes the impacts of the proposed action and alternatives on the environment. The legality of those actions is properly determined under authorities other than NEPA. The operator is responsible for acquiring any and all rights, agreements, permits, or licenses necessary to implement their approved POD. Nothing in the EA can convey or validate any property or use rights. PRG has certified that they have obtained the all necessary water well and spring mitigation agreements.

Alternatives

This section includes comments related to alternatives development and the description of the proposed action or the alternatives.

32. Comment: The Department failed to consider an alternative that would require Powder River Gas to inject some or all of its wastewater back into the methane beds to reduce the damage to land surface and aquifers that methane wells will cause. Injection or reinjection would both prevent wastewater from reaching the Tongue River and its tributaries, as well as minimize aquifer drawdown and the potential for lost wells and springs. The EA does not consider or discuss injection of wastewater. The EA needs to consider an alternative that requires Powder River Gas to inject and/or re-inject some or all of its wastewater instead of discharging it to surface waters. Several studies, including one completed by the EPA, show that injection costs are comparable to treatment costs in the Basin and that injection is feasible in areas where there are suitable geologic formations. The agencies need to complete a study to determine whether suitable geologic formations exist for injection in the vicinity of the Project. Without these baseline studies of suitable geologic formations, the agencies cannot effectively evaluate a reasonable range of alternatives. (5, 7, 10, 12, 13, 14, 22, 23)

Response: Because the proposed POD only involves a limited amount of water production associated with exploration and testing purposes, the alternative of disposal via injection was not considered in detail. Furthermore, because one of the purposes of the proposed action is to demonstrate the feasibility of the Higgins Loop water treatment system, most of the water will be treated and suitable for discharge. This discussion has been added to the EA in Section 2.1.1, Alternatives Considered but Eliminated from Detailed Analysis.

33. Comment: The EA does not consider alternatives such as whether Powder River Gas could treat all of its wastewater prior to discharge into the Tongue River instead of treating some of its wastewater and mixing this clean, treated water, with untreated water. This cannot be the best available technology. Why not require all of the produced water to be treated using the Higgins Loop system? The treated water could be discharged without disturbing the existing quality of the river. Complete treatment would eliminate the need for a "mixing zone" in the Tongue River (a stretch of the river in which pollutants are diluted) and ensure no degradation of the Tongue River. If the water is treated to an EC of 1000 and SAR of 3 it will degrade the water quality in the Tongue. The standards are presently being violated at Miles City and these additional loads will only cause greater exceedence. I thought the BLM was requiring that the best available technology be used to deal with produced water. If it is feasible to treat most of the produced water, why isn't it feasible to treat all produced water prior to discharge? This alternative needs to be considered in the EA; based on recent studies, it is affordable. (5, 6, 10, 12, 13, 18, 22, 23)

Response: The feasibility of the Higgins Loop treatment system is still being demonstrated. The alternative to require complete treatment of all the produced water was considered but not analyzed in detail due to the limited amount of water that will be produced during the length of the exploration testing and because the quality of the proposed mixture of treated and untreated water will be protective of beneficial uses. This discussion has been added to the EA in Section 2.1.1.

34. Comment: The EA does not consider alternatives such as subsurface power lines. The Agencies need to consider an alternative requiring that power lines be buried to reduce impacts on raptors. The United States Fish and Wildlife Service, Biological Opinion, required power lines to be buried where feasible as a condition of the incidental take permit for bald eagles. The Agencies have offered no explanation as to why PRG is not being required to bury all power lines. (10, 13)

Response: No additional overhead lines will be constructed as a result of this project. All lines will be buried to the treatment facility and well locations. The overhead line that services this project is currently in existence. An additional alternative or mitigating measure is therefore not necessary. The EA has been modified to clarify how power lines will be constructed.

35. Comment: Chapter 2, Section 2.2.2, Alternative B, Page 14, Paragraph 3, and Chapter 2, Section 2.2.3, Alternative C, Page 15, Paragraph 5: PRG intends to depressurize past the testing phase until pipelines and production facilities are installed and operable. After testing, the gas will be shut off and ground water pumping would continue. (9)

Response: Additional correspondence with PRG has confirmed that their intention was to test groundwater pumping associated with the exploration POD, not exceed 6-months duration or 1.26 MMCF whichever comes first, for each well. The alternative description and impact analysis in the EA has been modified accordingly.

36. Comment: Chapter 2, 2.2.2 Alternative B, Page 15, Paragraph 1, and Chapter 2, 2.2.3 Alternative C, Page 16, Paragraph 4. "Powder River Gas proposes to do the reseeding in the fall of 2004.": Reseeding will not occur in 2004 because of the delay in approval of the Plan of Development. Reseeding will most likely occur in the fall of 2005. (9)

Response: The EA has been changed to reflect seeding in the fall of 2005.

37. Comment: In paragraph 1.3.2 the EA states that the spacing and location of these wells has already been determined. It appears that several of wells and roads are in areas that have steep terrain or grass and trees that could be easily ignited by flaring or extra vehicle travel on 2 track trails. Will the APD be revised and well locations be moved if a better location can be found to develop? (12)

Response: The private surface owner and PRG agreed upon the well locations, right of way corridors, and the treatment facility location. The BLM conducted a field inspection on September 16, 2003 to help identify POD deficiencies and to consider the acceptability of the initial drilling locations. Slight adjustments in the drilling locations were suggested to the operator in order to reduce impacts. The operator incorporated these changes into the current proposed exploration POD. Therefore, the present locations are considered optimal for resource protection and we do not anticipate a need to change drilling locations from those presented in the EA.

38. Comment: On page 14 and 15 there is discussion about flaring. If the methane is flared how will fires be prevented? The landscape is very dry and could easily start a fire that could get into rugged terrain and destroy lots of timber and rangeland. Will personnel be stationed on each well 24 hours a day, 7 days a week to monitor the fire from the flares to verify no fires are started? Is there a bond put in place to cover the destruction of 1000's of acres of rangeland and timber? If so what is this bond amount? (12)

Response: Venting will occur at individual wellheads. Flaring would occur when there is a safety concern or a possible ignition source within 1000 feet to prevent an accidental ignition of gas. Flaring would be performed utilizing the current industry practices used to ensure safety. Although the operator is responsible for any damages caused by their operations, there is no bond allocated to cover accidents or undesirable events such as fire because they are not a planned part of operations or reclamation. The operator's general liability insurance may be applicable in such circumstances.

39. Comment: On page 14 there is discussion about the brine being transported to an injection site in Wyoming? Is this the closest injection facility? The disposal of brine resulting from the treatment process is not well enough defined. The proposal suggests recycling to beneficial uses but does not outline those uses. Does Powder River Gas have the appropriate permits to transport 60 barrels of reject water daily across the state line into Wyoming for injection into their deep disposal well? (12, 14)

Response: The description of Alternatives B and C in Chapter 2 of the EA have been modified to describe the transportation and disposal of brine from the treatment plant. No special permit is required, although transport must be done in compliance with Department of Transportation regulations.

40. Comment: It appears that approximately 1% to 3 % of the produced water inflow volume will be acidic regeneration waste. These wastes are likely to be very acidic, as low as pH 0.5, which is highly corrosive and will either need to be neutralized on-site or hauled as a hazardous material. Because this waste is a by-product of an industrial water treatment process, it will not be classified as a waste generated from the oil and gas production. This means disposal of these regeneration brine wastes will need to take place in a properly authorized Class I well which is suitable for handling industrial hazardous wastes. Neutralization will also generate a solid waste stream that would likely be suitable for disposal in a municipal solid waste facility. These issues need to be examined in the final EA. (20)

Response: While the classification of the waste has not been definitively determined, the waste will be sent to one of several Class I deep disposal wells. The description of Alternatives B and C in Chapter 2 of the EA have been modified to describe the transportation and disposal of brine from the treatment plant.

41. Comment: How will water produced from the wells be conveyed to the Higgins Loop™ ion exchange treatment facility? Is there potential for seepage of the untreated water through the conveyance system? Can overland flow enter the conveyance system and, if so, has storage in the treatment facility been designed to contain the 24-hour, 25-year storm in addition to the flow generated by Alternative C? (18)

Response: Produced water will be piped from the wellhead to a holding pond prior to treatment. The pond will be lined with a leak detection system. The pond will be bermed to prevent overland flow from entering. Because twice the pond volume will be treated daily, there is adequate freeboard to contain precipitation from a 24-hour, 25-year

storm event. The description of Alternatives B and C in Chapter 2 of the EA has been modified to describe water management at the treatment facility.

42. Comment: The EA provides that the storage in the treatment facility will be sufficient to shut down well production in the event that the ion exchange treatment is shut down. Given anticipated flow rates from Alternative C and a steady-state volume in the detention ponds, how much time is available to shut down the well system? Will the operator be able to respond to such emergencies on a 24-hour basis, given that such operators will commute from Sheridan, Wyoming? Is it anticipated that an emergency will be an unanticipated shut down of ion exchange treatment due to mechanical failure, or will the operator intentionally shut down such treatment due to water quality concerns? (18)

Response: Remote sensing telemetry will be used to monitor water production and the treatment plant operation and notify the operator should a malfunction occur. The description of Alternatives B and C in Chapter 2 of the EA has been modified to describe water management at the treatment facility.

43. Comment: Will a certified water treatment operator be responsible for the water treatment facility? (18)

Response: At the present time, the MDEQ does not require operators of industrial wastewater systems to be certified. In the future this requirement may change and permittees will be notified accordingly. Additionally, PRG and their subcontractor have affirmed there will be a number of engineers that specialize in the operation of the water treatment facility; but no one person with the title of “certified water treatment operator” will be running the treatment facility.

44. Comment: It appears that the map 1.3-2 only shows the preferred alternative C. Will a map be added that shows the no action alternative as well as alternative B? (12)

Response: No additional maps have been provided for Alternatives A or B since they are subset of Alternative C. Alternative A would only show the two existing wells and Alternative B would only show the wells drilled on non-federal minerals.

45. Comment: On page 21 in the alternative A column, one well is noted. Isn't Alternative A supposed to be no development at all? (12)

Response: Alternative A is the No Action Alternative, but not necessarily the no development alternative. This is because existing conditions in the project area include one location where two CBNG wells were previously drilled. These wells are located on private surface and private minerals. Testing, but not the drilling, of these wells is part of the proposed action. If the No Action Alternative had been selected these existing wells would still remain.

46. Comment: On page 23 there seems to be some discrepancies. Under road maintenance a 12 day drilling and testing procedure is described. Under discharge of produced water a 6-week time frame is noted. Is the test period 12 days or 6 weeks? (12)

Response: The EA has been modified to reflect the correct testing schedule of 6 months per well. The 12-day period is primarily reserved for the drilling operations.

47. Comment: On page 23 it states all reclamation would occur within one year. What about the reclamation required after the project is done producing methane? (12)

Response: The project is only for exploration and testing; the approved POD requires the wells to be shut-in and interim reclamation of all surface disturbance areas after the test period is complete. If the operator wants to engage

in commercial methane production a new POD for production would have to be submitted to the agencies for review and environmental analysis. Alternatives B and C have been edited to clarify the timing of the reclamation.

48. Comment: Are any considerations being made for the discharge into the low level of the river occurring between the end of one irrigating season and the beginning of the next? (14)

Response: Due to the relatively short time period involved in exploration drilling and testing, and proposal to treat water prior to discharge, a condition of approval limiting discharge during the irrigation season was not determined necessary to protect water quality.

49. Comment: EA page 14, paragraph 4, this analysis should identify specific uses. The Northern Cheyenne WQS lists public water supply and recreation as beneficial uses which are not included in the operators potential beneficial uses. (18)

Response: The operator does not propose to put the water to the beneficial uses of public water supply and recreation as the comment suggests. The EA description of Alternatives B and C has been modified to reflect the operator's proposed beneficial use of the produced water for dust abatement, drilling activities, vehicle washdown, and associated construction activities.

50. Comment: There is no description of the reclamation plan negotiated with the landowners, no discussion of whether such reclamation plans have been successfully negotiated, and no evaluation of the effectiveness of such reclamation plans. Onshore Oil and Gas Order. (13)

Response: See 2.2.3 Alternative C—Proposed Action with Mitigation: *Agencies Preferred Alternative*, for a detailed description of the reclamation plan. PRG has obtained a surface use agreement with the private surface owners, which includes reclamation measures. In consultation with the surface owners on May 12, 2004, it was indicated to the BLM that the surface use agreements were acceptable and adequate to protect the surface owners' rights. The surface owner can at the time of the on-site visit request that specific items be made part of the Surface Use Program, which BLM may include in the Surface Use Program if determined beneficial to the development of the lease and consistent with conditions of approval that BLM would employ. No specific items were requested by any of the surface owners. BLM is satisfied with the reclamation plan provided by PRG with the addition of the conditions of approval included in Alternative C. That being the case, there is no need for PRG to submit these plans separately to BLM or BLM to review the adequacy of the reclamation measures included in PRGs' agreements with private surface owners.

51. Comment: The EA states that gas would be carried from each well to the battery site. EA-22. Yet other sections of the EA state that the gas would be vented or flared during the testing phase. Which is it? (13)

Response: This project is exploration testing only, the gas will not be carried to a well battery site but will be vented or flared off. Venting will occur at individual wellheads. Flaring will occur when there is a safety concern or a possible ignition source within 1000 feet to prevent creating an explosive condition. Flaring will be performed utilizing all current industry practices to ensure safety. The narrative in the EA describing Alternatives B and C has been edited to clarify this process.

52. Comment: Onshore Order 7 requires that lined pits include a leak detection system. Please describe the leak detection system for PRG's lined wastewater impoundments. (13)

Response: PRG submitted an "Application for Permit to Construct or Operate an Earthen Pit or Pond" with the MBOGC on September 25, 2003. The BLM and MBOGC requested PRG to provide additional information on the process pond for the MBOGC's Earthen Pit or Pond Application and to demonstrate no adverse environmental impacts and no impacts to health and safety from the use of the impoundment (Onshore Order 7 III.B.2.b.ii). The

description of Alternatives B and C in the EA has been changed to include the operator's plan for a lined impoundment with a leak detection system.

53. Comment: Onshore Order 7 requires that the operator submit a reclamation plan "detailing the procedures expected to be followed for closure of the pit and the contouring and revegetating of the site." Where is the PRG reclamation plan for the lined wastewater impoundments? (13)

Response: The description of Alternatives B and C in the EA has been changed to include the plan for reclamation of the lined impoundment.

54. Comment: Onshore Order 7 prohibits the BLM from approving discharges to lined pits until the operator has submitted information showing (a) the pit dimensions, cross section, and *leak detection system*, (c) criteria used to determine pit size, which includes a minimum of 2 feet of free-board; (d) the method and schedule for periodic disposal of precipitated solids and a copy of the appropriate disposal permit; (f) the type, thickness, and life span of the material to be used for lining the pit and the method of installation, including the manufacturer's guidebook and information for the product if available. Please explain whether PRG submitted this necessary information for its lined wastewater impoundments. (13)

Response: The BLM and MBOGC requested PRG to provide additional information on the process pond to comply with the MBOGC's Earthen Pit or Pond permitting requirements and Onshore Order 7, III.B.2.b.ii. The information provided meets the requirements of Onshore Order 7, III.B.2.b.ii.

55. Comment: Onshore Order No 7.III.E includes specific design requirements for lined pits and provides that pits that fail to meet the minimum requirements will be disapproved. Please explain how the BLM determined that PRG's proposed lined impoundment meets all these minimum requirements including but not limited to a suitable leak detection system. (13)

Response: The BLM resource specialists evaluated the requirements of Onshore Order No. 7 for the PRG POD and required PRG to comply. PRG has provided the necessary information required by Onshore Order No. 7 for disposal of water in pits on state and privately owned lands; including approval for the pit from the MBOGC, and the installation of a monitoring well and gauging schedule. Please see Appendix E in the Hydrological Technical Report for the Onshore Order No. 7 compliance information.

56. Comment: PRG is proposing to dispose of waste product from its ion exchange treatment system at a permitted facility. Please provide a copy of the permit for such facility. (13)

Response: PRG has identified three permitted disposal sites located in Wyoming. The three sites are described in Chapter 2 of the EA under the description for Alternatives B and C.

Air Quality

57. Comment: On page 7 of the EA in paragraph 1.3.1 the statement is made that a MAQP permit is not required. Have the cumulative effects of all of the compressor stations and flaring in the nearby Fidelity field and Wyoming development been considered in the Air Quality monitoring? (12)

Response: The proposed project would not require a MAQP and ambient air quality modeling would not be required. Emissions from the proposed project would be minor and temporary. The air quality portions of the EA have been revised to include emissions from each of the alternatives considered. If future development (installation of compressor engines, generators, etc.) is proposed and the future project requires a MAQP, ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis would be required.

58. Comment: On page 14 and 15 there is discussion about flaring. Would 30,000 cubic feet of Methane per well per day exceed the air quality limits in this narrow canyon? The narrow canyon where the proposed project area lies is environmentally sensitive and already has an inversion problem with the pollution from the Decker Coal and Spring Creek Coal mines several miles away. Won't the venting and flaring of the gas be an additional detriment to the air quality? (12, 14)

Response: CBNG is nearly all methane (~96.5%), with trace amounts of nitrogen (~3.0%) and carbon dioxide (0.5%). Methane, nitrogen, and carbon dioxide are not regulated air pollutants; therefore, there are no air quality regulations limiting methane. The air quality sections of the EA have been revised to include an emission inventory (including flaring of the methane) for each alternative. As the emission inventory demonstrates, flaring of the methane would only result in minor emissions.

59. Comment: FEIS page 4-9 makes the assumption that methane released during exploration projects will be flared and not vented when addressing potential air quality impacts. As this EA proposes to vent released gas, has updated air quality modeling been performed to determine the direction and concentration of the gas from the exploration site? (18)

Response: CBNG is nearly all methane (~96.5%), with trace amounts of nitrogen (~3.0%) and carbon dioxide (0.5%). Methane, nitrogen, and carbon dioxide are not regulated air pollutants and the proposed project would not exceed MAQP thresholds. The air quality sections of the EA have been revised to include an emission inventory for each alternative considered, including venting during the testing phase. As the emission inventory demonstrates, emissions from the proposed project are minor. The emission thresholds MDEQ uses to determine if modeling is appropriate are above the MAQP triggering thresholds; therefore, modeling would not be required for the proposed project.

60. Comment: Powder River Gas has indicated that they will use gas powered generators and compressors instead of electricity for this project. Won't that cause even more degradation to the air quality and noise impact? (14)

Response: Gas powered generators and compressors for production are not proposed as part of the exploration project. If future development (installation of compressor engines, generators, etc.) is ever proposed that requires a MAQP, then ambient air quality modeling that would be conducted to determine the air quality impacts from the project.

61. Comment: The Northern Cheyenne Tribe is very concerned that there has been no formal Air Modeling that has been performed as part of the Environmental Analysis for the proposed project. The Tribe is disappointed that the EA relies solely on the inadequate analysis of air quality in the FEIS when assessing the effects of future CBNG development on the Reservation's Class I increments. The present EA contains no modeling of the additional consumption of the Reservation's Class I increments for NO_x and PM₁₀ that would result from reasonably foreseeable CBNG production activities within the project area. The EA for the current project should build on the Badger Hills analysis and include modeling that predicts the likely additional consumption of NO_x and PM₁₀ increment that will result from reasonably foreseeable CBNG production in the POD area. (18, 19)

Response: The air quality sections of the EA have been revised to include an emission inventory for each alternative considered. As the emission inventory demonstrates, emissions from the proposed project are minor. The project does not require a MAQP and MDEQ modeling thresholds are above the MAQP thresholds; therefore, modeling is not required for the project. The minor source baseline date has not been triggered for any regulated pollutant in the project area because no PSD sources significantly impact the proposed project area. In addition, ARM 17.8.807 exempts concentrations of SO_x, TSP, or NO_x emitted from temporary sources, such as those associated by the exploration project, from consuming increment. If future development (installation of compressor engines, generators, etc.) is proposed and the future project requires a MAQP, ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis would be required.

62. Comment: Is a ten foot stack to vent the gas sufficient to prevent increases in methane concentrations near the ground? (18)

Response: A ten foot stack is adequate. The gas produced is lighter than air so it should rise unless an inversion occurs that would keep it close to the ground.

63. Comment: The EA states that flaring of the methane gas will be done when a safety concern is present. What factors will determine when such a safety concern is present and who will make the determination to flare the gas rather than vent? (18)

Response: The operator would flare gas when there is a safety concern or a possible ignition source within 1000 feet. The only safety concern is a combustion source near the vent stack, such as a running motor without spark arrestors, open flame sources, or a chimney that may produce sparks to the air. The gas will disperse quickly and would not be in flammable concentrations very far from the vent stack. The determination to flare rather than vent would normally be made by a company representative since they would be liable for any fire or other damage that might result from their action or inaction. Flaring would be performed utilizing all current industry practices to ensure safety.

64. Comment: EA page 14, paragraph 2, Could the reserve pits be capable of allowing wind blown PM. (18)

Response: The reserve pits could be a source of wind blown PM. The air quality sections of the EA have been revised to include an emission inventory (including the disturbed acres) for each alternative. As the emission inventory demonstrates, ground disturbance would only result in minor emissions.

65. Comment: EA page 36, paragraph 1, Entire Section does not adequately address Air Quality impacts. The Northern Cheyenne Reservation is classified as a Class I Airshed and the Town of Lame Deer has been re-classified as a PM10 non-attainment area. The draft EA does not sufficiently identify and address the impacts to these two Federally designated standards. There is no discussion or analysis pertaining to regional haze impacts associated with the proposed development. There is no increment consumption analysis performed including proposed power project emissions. The project area is south of the NC Tribe PM10 non-containment area and the predominant winds come from the south. (18, 19)

Response: The air quality sections of the EA have been revised to include an emission inventory for each alternative and to identify the Lame Deer PM₁₀ non-attainment area. As the emission inventory demonstrates, emissions from the proposed exploration project are minor and temporary and would not significantly impact the Lame Deer PM₁₀ non-attainment area. The minor source baseline date has not been triggered for any regulated pollutant for the area of the proposed project because no PSD sources significantly impact the project area. In addition, ARM 17.8.807 exempts concentrations of SO_x, TSP, or NO_x emitted from temporary sources, such as those proposed to BLM, from consuming increment. Therefore PSD is not applicable to the proposed project and a regional haze and or an increment consumption analyses is not required. If future development (installation of compressor engines, generators, etc.) is proposed and the future project requires a MAQP, ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis would be required.

66. Comment: What is very concerning to the Tribe is the fact that the draft EA at page 37, paragraph 2, constitutes a "Passing of the Buck" with regards to conducting environmental impacts analysis. It does nothing for providing adequate analysis of impacts for the purpose of approving this project with regards to air quality modeling and impacts determination. The draft EA states that the MDEQ "is responsible for determining potential impacts from detailed development plans". In essence this tactic seeks to allow the authorization of development activities without having to perform the required analysis under NEPA. (18, 19)

Response: The EA correctly reflects that the MDEQ determines when an air quality permit is required and assesses the potential air quality impacts from that permit. The EA is a joint document with the MDEQ and their analysis of the need for an air quality permit, along with potential air quality impacts from the exploration project, have been included. The air quality sections of the EA have been revised to include an emission inventory for each alternative and to identify the Lame Deer PM₁₀ non-attainment area. The proposed project does not require a MAQP and MDEQ modeling, thresholds are above the MAQP thresholds; therefore, modeling is not required for the proposed project. The minor source baseline date has not been triggered for any regulated pollutant for the area of the proposed project because there are no PSD sources that significantly impact the proposed project area. In addition, ARM 17.8.807 exempts concentrations of SO_x, TSP, or NO_x emitted from temporary sources, such as the proposed exploration, from consuming increment. The proposed project would not require a MAQP and ambient air quality modeling would not be required. Emissions from the proposed project would be minor and temporary. The air quality portions of the EA have been revised to include emissions from each of the alternatives considered. If future development (installation of compressor engines, generators, etc.) is proposed and the future project requires a MAQP, ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis would be required.

67. Comment: EA page 47, paragraph 7, There is no analysis of PM 10 or PM2.5 impacts to the Northern Cheyenne non-attainment area. (18)

Response: The air quality sections of the EA have been revised to include an emission inventory for each alternative and to identify the Lame Deer PM₁₀ non-attainment area. As the emission inventory demonstrates, emissions from the proposed project are minor. The project does not require a MAQP and MDEQ modeling, thresholds are above the MAQP thresholds; therefore, modeling is not required for the proposed project. The minor source baseline date has not been triggered for any regulated pollutant for the project area because there are no PSD sources that significantly impact the project area. In addition, ARM 17.8.807 exempts concentrations of SO_x, TSP, or NO_x emitted from temporary sources, such as the proposed exploration, from consuming increment. The proposed project would not require a MAQP and ambient air quality modeling would not be required. Emissions from the proposed project would be minor and temporary. The air quality portions of the EA have been revised to include emissions from each of the alternatives considered. If future development (installation of compressor engines, generators, etc.) is proposed and the future project requires a MAQP, ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis would be required.

68. Comment: EA page 47, paragraph 7, Would there be monitoring for these pollutants? (18)

Response: Because the project does not require a MAQP and MDEQ modeling, thresholds are above the MAQP thresholds, ambient air quality modeling and/or monitoring are not required for the exploration project. However, MDEQ compliance officers may inspect the project area to determine compliance with opacity and/or reasonable precaution requirements.

69. Comment: EA page 48, paragraph 1, The Montana FEIS did not adequately incorporate all sources of emissions in its air analysis. Increment modeling has shown that the proposed Round-up Power Project alone would significantly impact the Northern Cheyenne Class I airshed. The analysis conducted on the Round-up Power Project does not even include increment consumption from CBNG developments. (18)

Response: It is incorrect to state that the proposed Round-up Power Project would significantly impact the Northern Cheyenne Class I Airshed. MDEQ, EPA, and the Northern Cheyenne tribe have had discussions on this issue and have agreed that the Round-up Power Project does not significantly impact the Northern Cheyenne Class I Airshed. In addition, all known sources around the proposed Round-up Power project at the time the analysis was conducted were included in the increment consumption analysis.

70. Comment: In the ROD signed in April of 2003, over 15 months ago, the BLM, DEQ, and BOGC committed to establishing an Interagency Working Group for developing and recommending monitoring and mitigation

measures to address surface water and air quality concerns. BLM ROD at 15. Specifically, the Interagency Working Group was to facilitate regional monitoring, analysis, and mitigation” of air quality impacts and to develop “regional cumulative impacts to air quality.” BLM ROD at 15. The MDEQ committed to establishing at least one regional-scale ambient monitoring station and that data used from the monitoring program will be used to model cumulative impacts. MDEQ ROD at 10. Please describe the monitoring plan developed by the Interagency Working Group for air quality and disclose the air quality monitoring data collected from such program. (13)

Response: The Interagency Working Group has been formed and they are currently working on determining exactly what monitoring data is available for the area. The MDEQ currently requires each potential source (that requires a MAQP), proposing to be placed in the FEIS study area, to conduct ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis.

71. Comment: PRG is anticipated to drill an additional 28 wells if testing is successful. EA-19. Delivering the gas to market would require compressor stations and pipelines. There is no discussion of the impacts of such “reasonably foreseeable” future actions in the EA. BLM predicts that emissions from the Fidelity Badger Project alone will consume 90% of the available PSD Class II increment for nitrogen dioxide; 62% of the annual and 71% of the 24-hour standard for particulates. EA at 85. A third Fidelity expansion, the Coal Creek Project, will require three additional compressor stations, and their emissions will have cumulative impacts on air quality. Particulate and nitrogen oxide emissions from TRR will be substantial. The Agencies need to address the cumulative impacts on air quality when the impacts of full field development of the PRG project is combined with the impacts of other past, present, and reasonably foreseeable future actions in the valley. (13)

Response: The EA discusses reasonably foreseeable future actions. However, neither BLM nor MDEQ can analyze emissions from the future actions without critical analysis factors. Such information would not be available until future actions are proposed; and performing the analysis based on assumptions would not disclose anything different from the type of impacts already disclosed in the FEIS. MDEQ does not have information to determine how many compressor stations would be required, equipment that would be operated at the compressor engines (types and/or capacities), or the locations of any future compressor stations. Additional NEPA/MEPA analysis and permitting would be required if development plans are proposed. If future development (installation of compressor engines, generators, etc.) is proposed and the future project requires a MAQP, ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis would be required.

72. Comment: The draft EA does not adequately account for the cumulative impacts to air quality from all possible emissions sources located in southeastern Montana that may have an impact on the Tribe's air resources. (19)

Response: The air quality sections of the EA have been revised to include an emission inventory for each alternative. As the emission inventory demonstrates, emissions from the project would be minor and temporary. The project does not require a MAQP and MDEQ modeling, thresholds are above the MAQP thresholds; therefore, modeling would not be required for the proposed project. The minor source baseline date has not been triggered for any regulated pollutant for the area of the proposed project because there are no PSD sources that significantly impact the proposed project area. In addition, ARM 17.8.807 exempts concentrations of SO_x, TSP, or NO_x emitted from temporary sources, such as those in the exploration project, from consuming increment. The proposed project would not require a MAQP and ambient air quality modeling would not be required. Emissions from the proposed project would be minor and temporary. The air quality portions of the EA have been revised to include emissions from each of the alternatives considered. If future development (installation of compressor engines, generators, etc.) is proposed and the future project requires a MAQP, ambient air quality modeling that would include a NO_x PSD Class I and Class II increment analysis would be required.

73. Comment: We [EPA] suggest that the final EA indicate any restrictions that would apply to the length of time flaring may occur. The proposed action does not involve the installation of natural gas compressors, since the proposed action is to shut in these wells after initial production testing. The final EA should indicate the limits

on nitrogen oxide emissions from compressor engines that will be applicable should the company pursue commercial scale development requiring gas compression for interstate pipeline delivery. (20)

Response: The proposed project would limit flaring to 1260 MCF per well and the entire project would be limited to 6 months, whichever comes first. The EPA is correct that the proposed project would not involve the installation of natural gas compressor stations. However, MDEQ can not indicate any limits on NO_x emissions from any future compressor engines because, as EPA is aware, NO_x emission limits would be established through making a BACT determination, which is done on a case by case basis, and MDEQ does not have a production proposal, which would include a BACT analysis, to determine nitrogen oxide emission limits.

74. Comment: The BLM has not done anything to address the impact that CBM development will have on global warming. In any realistic assessment of the impact of CBM development, the impact of global warming must be considered. (22)

Response: The MT FEIS analyzed and disclosed potential air quality impacts from the no action alternative and four action alternatives, including potential climate impacts. MT FEIS at 4-14. Additional analysis for the PRG exploration project on global warming is not necessary as it is within the scope of the MT FEIS analysis of potential climatic impacts.

Cultural Resources

75. Comment: The letter of June 28, 2004, states that a Class III Cultural Survey was completed in August 2003. It appears that information requested in the June 28th letter is being solicited somewhat after the fact. The survey should have considered the potential for both historic districts and traditional cultural properties (TCPs) in the project area, in addition to identifying individual sites such as those shown on the included map. Without the report itself, it is unclear whether an attempt was made to identify these types of properties early in the process and what resulted from that investigation. (1)

Response: The survey did consider the potential for historic districts. The issue of historic districts however, was not raised when the Montana SHPO reviewed the report in September 2003. BLM makes itself responsible for the Native American consultation rather than using consultants, which resulted in no TCPs, including plant-collecting areas, identified in the project area. BLM appreciates that several comments provided input about historic districts and will continue to include this consideration in future CBNG inventory activities and consultation with the Montana SHPO.

76. Comment: If this is the first attempt to carry out tribal consultation or to seek consulting parties, then we believe that this narrow scope is insufficient to satisfy consultation requirements of the National Historic Preservation Act or BLM internal procedures governing Tribal Consultation, such as BLM Manual 8160. Inquiry about the presence of TCPs should be made across the entire project area and not be limited to the two properties described in the letter and cited in the Ethnographic Overview. Since the sites about which you are specifically seeking additional information are associated with the Crow and Sioux tribes, a particular effort should be made to contact those tribes, and other tribes that may have cultural affiliation with the area. (1)

Response: The BLM is not seeking consulting parties. However, since both the Montana Preservation Alliance and National Trust for Historic Preservation expressed interest, we included them in the mailings sent out for Native American consultation. We believe the National Trust has misconstrued our intentions with the identification of the properties specifically identified in BLM's June 28th letter. BLM did not think these were the only potential TCP's in the area. However, we did believe additional information was needed since the Tongue River Canyon is a fairly large area and near the Tongue River dam is at best a vague reference. BLM conducted an on-site investigation with the Northern Cheyenne THPO. No plant gathering areas or TCPs were identified as a result of those efforts. BLM has not heard back from either the Crow or Sioux Tribes about the battlefield. The BLM has provided a reasonable and good faith efforts in seeking comment from these tribes; thus the consultation is considered complete.

77. Comment: We have not seen any information that addresses possible indirect effects on things such as the context or setting of the spring and how that could be affected by the presence of the two nearby wells. (1)

Response: The spring has been developed as a water source for livestock and as noted by the Northern Cheyenne is not considered a TCP. The present context of the spring would not be impacted by the proposed wells.

78. Comment: We also note that the survey was prepared for "Development Portion 'A'" of this POD and are interested in learning whether this is part of larger POD which should be reviewed as one project instead of segmented into portions. (1)

Response: The cultural report on page 8 notes that it is a "pilot project" for a larger undefined POD area. However, to date, BLM has not seen either a report for the larger area or a proposal for development of a larger area by the operator. BLM does not intend to segment the project but to evaluate proposals as they are received. At this time BLM has only received a proposal for exploration drilling and testing at eight locations as described in the EA.

79. Comment: Our confusion about BLM plans for tribal consultation resulted in part from a line in the EA on page 35 (07/16/2004) that says, "BLM would again consult with the SHPO and included the results of [tribal] consultation." It was not clear when that would occur or why the EA was posted without that information in the first place. Since your call I understand that we should anticipate an opportunity to comment once you have consulted with the Cheyenne. But, does that also imply that the FONSI or other decision document will be set back until the Cheyenne, NTHP, NPRC, MPA and other parties of record have an opportunity to comment on the results of that Tribal and hopefully other identification efforts? (2)

Response: The BLM completed consultation with the Northern Cheyenne Tribe prior to signing the Decision Record/FONSI. Additionally, BLM again consulted with the Montana SHPO over additional findings made during the BLM on-site inspection with the Northern Cheyenne THPO and on some changes to the water distribution system.

80. Comment: The problem in assessing the adequacy of even the block inventory area is, and has been, what we see as a lack of a comprehensive description of the Plan of Development as a whole. What have been submitted are piecemeal portions of inventory - the total undertaking for which - is not described. (2)

Response: BLM does not intend to segment the project but to evaluate proposals as they are received. At this time BLM has only received the proposal for exploration drilling and testing at eight locations as described in the EA. We have not seen any information from the consulting archaeologists or operator for activity in a larger area. Although we required additional cultural inventory work, this was within the proposed POD boundaries.

81. Comment: BLM's responsibility for tribal consultation, and consultation with others, cannot be met by consulting with SHPO on the adequacy of an archaeological inventory report. (2)

Response: BLM is aware of the necessity for tribal consultation and knew additional work was necessary in order to complete consultation requirements. This fieldwork was delayed to take into account tribal input and updated inventory results.

82. Comment: WLS noted in the report that no previously known resources were located during the record search. While this is true for Sections 6 and 7 T8S R41 and Sections 1, 2, and 12, T8S R40E, this is not true for sections that are directly adjacent to project area and which may incur indirect adverse impacts. Determining the NR status of the remaining known resources which may be near the project area and which may be indirectly impacted is a critical step that is missing in -the inventory report approach. If adjacent

resources are determined eligible, then the project may impact historic properties. How does BLM intend to evaluate adjacent cultural resources and determine impacts?

The record search area did, not take into consideration adjacent resources potentially impacted by the POD. Nominally, an Area of Potential Effect (APE) considers *both* direct and indirect impacts, and is defined in the National Historic Preservation Act (NHPA/CFR Section .800.16(d) as: "... *the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist.*"

According to that same section of the NHPA, the *'Agency Official shall consult with the SHPO/THPO to determine and document the area of potential effects, as defined in Section 800.169(d).*

Under that guidance, the currently-defined APE, which uses project boundaries and therefore seems to only consider direct impacts, is likely inadequate. Did BLM or WLS consult with the State Historic Preservation Office (SHPO) and interested Native American tribes to define an APE? (8)

Response: BLM under its National Programmatic Agreement and implementing protocol with the Montana SHPO determines the Area of Potential Effect (APE) for PODs. Unless there is an exceptional reason to do so, BLM would not consult to determine an APE for a project.

BLM strongly disagrees with the contention that sites that are not visible from the project or located over a mile away would be indirectly adversely affected by this project. All of the sites mentioned by MPA were recorded as part of the Tongue River Dam Project. There would be no use other than the existing county road near any of the previously recorded sites. The closest site to the POD, 24BH2590, has been determined to be not eligible. It is also in the Tongue River Dam State Park.

There is however, one exception to this. Feature 7 of Ethnoscience's 1995 re-recording of the Lee Homestead (24BH2349), a site listed on the National Register of Historic Places. The feature extends into Section 7. We have changed the EA and our updated correspondence to the Montana SHPO to reflect this. We would note that this does not appear in the CRAB or CRIS databases nor does Section 7 appear in the CRABs form attached to the report. It does appear on the site location map included with the report.

83. Comment: BLM's June 28, 2004 correspondence to our office notes the existence of a spring in the LLC Coal Creek project area as identified in the *Ethnographic Overview of Southeastern Montana*. Tribes often regard springs as sensitive areas. BLM stated their intention to avoid the spring and that a BLM Hydrologist did not anticipate impacts to the flow of the spring.

However, in the *Northern Cheyenne Mitigation Appendix, BLM Mitigation Measures -Under Alternative E* of the statewide FEIS, the BLM states that *"The Northern Cheyenne Cultural Commission would be consulted about the appropriate mitigation if culturally significant springs were located within the drawdown radius of the operator's proposed development."*

Has BLM consulted with the Northern Cheyenne to determine if this spring is culturally significant? If a spring is found to be culturally significant, BLM stipulates that mitigation through tribal consultation will occur when a spring is located in a drawdown radius, which this spring is. The finding of effect to the spring by a BLM Hydrologist is irrelevant to the need to discuss mitigation through tribal consultation especially if effects may be indirect. (8)

Response: Actually, according to the Northern Cheyenne Mitigation Appendix, the hydrologic criteria is to be applied first to determine if the spring is located where it could have its flow altered by the groundwater drawdown. Springs with potential hydrologic impacts (changes in flow) then required tribal consultation to determine their cultural significance and the potential for associated cultural effects and appropriate mitigation. However, even in this case, BLM has consulted with the Northern Cheyenne THPO and found that the spring is not a TCP.

84. Comment: BLM correspondence of June 28, 2004 also references two traditional cultural properties --. a Northern Cheyenne plant gathering area near the Tongue River Dam, and a battle site between the Crow and the Sioux on the Tongue River. Is BLM planning to meet with and formally consult these tribes to resolve questions regarding the location and significance of these sites, as well as the National Register eligibility and potential for adverse impacts to' these places? (8)

Response: The BLM has met with the Northern Cheyenne THPO on-site and found there were no Northern Cheyenne TCPs in the POD area. BLM has not heard from the Crow or Sioux Tribes. The BLM has provided a reasonable and good faith efforts in seeking comment from these tribes; thus the consultation is considered complete.

85. Comment: With the exact location and National Register eligibility of these places remaining unknown; it is impossible to determine potential -adverse impacts. According to the *Northern Cheyenne Mitigation Appendix* in BLM's FEIS, it is a "current requirement by BLM for "cultural resource contractors to demonstrate good faith consultation with the Tribe and make every attempt to include Cheyenne cultural resource specialists in all aspects of their work (p. CHE=19)." It does not appear that WLS or BLM properly followed through with this requirement. How does BLM plan to enforce this requirement for this project? (8)

Response: The BLM believes it has followed through on the requirements in the Northern Cheyenne Mitigation appendix and consulted in good faith with the Tribe and included their cultural resource specialist (THPO) in review of the operator's proposal. We disagree that it is not possible to determine adverse effects. We believe the project would have No Adverse Effect to historic properties.

86. Comment: MPA recommends that the BLM clearly define areas of direct and indirect impact in accordance with NHPA procedures. Conduct follow-up efforts to determine the potential for indirect impacts' on known resources that are known to exist adjacent to the project area. Actively and directly consult with all tribes identified with aboriginal links to the project area, regarding the existence of potentially significant traditional cultural properties, and sites on and adjacent to the POD. (8)

Response: The BLM has followed NHPA procedures. We do not believe that the present project would indirectly affect the sites associated with the Tongue River Dam. These sites are not visible from the project area and no change would occur to the sites. We have consulted with the tribes, including the Northern Cheyenne Tribe. We have incorporated the suggestions regarding areas of direct and indirect impacts into the EA.

87. Comment: Chapter 2, Table 2.5-2, Page 26, "A spring is identified between wells 5-6F and 11-6F. This is a sensitive site type identified in the Crow and Northern Cheyenne Technical Reports and the Southeast Montana Ethnographic Overview": Does the Montana SHPO or BLM request that special attention be paid to spring sites, above and beyond normal examination? Archaeological survey crews from Western Land Services examined springs in detail, simply because of their inherent nature, that of good, probable site locations. (9)

Response: Yes, springs are considered important to many Native American groups and warrant additional attention. They may contain characteristics not readily apparent to some surveyors. The spring is 700 feet northwest (as measured off the Tongue River Dam 7.5 Min. Map) from the 11-6 Well. The BLM's hydrologist is the person who conducted the hydrological analysis of potential impacts to the spring from CBNG development. The Northern Cheyenne THPO visited the spring and concluded it was not culturally significant.

88. Comment: Chapter 3, Page 35, Section 3.2, Paragraph 2, "However, in a letter to BLM on March 9, 2003, they [Montana SHPO] suggest this might be premature in the absence of any input from tribal groups." Chapter 3, Page 35, Section 3.2, Paragraph 4, "The THPO [Northern Cheyenne Tribal Historic Preservation Officer] did not feel the report was adequate since it lacked Northern Cheyenne input.": Does the Montana SHPO or BLM request that PRG consult with tribes as projects are on-going, or is this to be handled after the fact by the BLM?

In some cases, on-going project consultation is probably warranted (possible vision quest sites, rock art panels, etc.), but in this case, it did not seem necessary given that the encountered sites were domestic debris, consisting of lithic scatters and isolated artifacts. (9)

Response: The regulations for implementing the National Historic Preservation Act require the federal agency to consult with Native American tribes. The Miles City Field Office POD Guidance Document (Appendix E, BLM Responsibilities) explains that BLM is responsible for Native American Consultation. BLM accepts responsibility for ensuring consultation with Native American tribes.

89. Comment: Chapter 4, Page 46, Section 4.2.2, "There is good potential for TCPs to occur on the private lands in the POD boundaries or to be affected by the development of private minerals.": This is a vague statement with little empirical support. (9)

Response: The statement was based on the information in the Ethnographic Overview and prior to our on-site visit with the Northern Cheyenne THPO. The sentence has been removed from the EA.

90. Comment: On page 12 under Tribal consultation. Since the tribes have not been allowed to access the site prior to locating the well sites and roads, will the well sites or roads be moved or eliminated to protect cultural sites or artifacts? (12)

Response: Avoidance of impacts is the preferred method of not affecting sites. This may include moving locations of infrastructure and wells to avoid impacting sites. In this case the identified sites are located away from the proposed construction and would not be affected. An infrastructure corridor has been re-routed and would avoid impacting one of the isolated artifacts observed in the POD. One isolate may be affected. This is an abandoned automobile that is adjacent to the infrastructure corridor to the 11-6 well. The isolate is not considered eligible and there would be no impact to historic properties. Additionally, since the potential for buried cultural deposits exist we have incorporated construction monitoring provisions into the conditions of approval for the POD.

91. Comment: We [National Trust] were very puzzled to see that the EA was issued on July 19th, prior to the deadline for submitting our comments on cultural resource issues. Therefore, it is not possible that our comments could have been taken into account prior to the issuance of the EA. We request that you now consider the issues raised in our earlier letter, as they are responsive to Mr. Jaynes' letter, and also responsive to this EA. (15)

Response: We have incorporated the Trust's comments and concerns into the EA. We thank the National Trust for taking the time to comment. We will work to insure that confusing deadlines do not overlap or make this clear in our letters.

92. Comment: In walking the area I [Northern Cheyenne Tribal Historic Preservation Officer] did not observe any Traditional Cultural Properties in the area of development, and the spring in question was really over developed by the landowner, to be culturally significant. I am pleased that my office is being consulted and given a chance to visit the sites surveyed by WLS. I would like to encourage BLM to require construction monitoring when the ground disturbing activities start with a Cheyenne trained monitor, in case of an inadvertent discovery of human burials, so that work can be halted, a coroner contacted, removal and reburial can occur immediately after consultation with the affected tribes. (17)

Response: BLM appreciates the assistance of the Northern Cheyenne THPO. We have taken the suggestions for monitoring and incorporated them into the project as conditions of approval.

93. Comment: EA page 38, paragraph 1. There is mention of a surface water spring site located in the vicinity of the Well 11-6. Springs of varying types and subsurface origins are considered sacred to the Northern

Cheyenne. What is the exact distance from Well 11-6 to the spring-site? Whom is responsible for demonstrating hydrological analysis of adverse affects to the spring resultant from Well 11-6? (18)

Response: The spring is 700 feet northwest (as measured off the Tongue River Dam 7.5 Min. Map) from the 11-6 Well. The BLM's hydrologist is the person who conducted the hydrological analysis of potential impacts to the spring from CBNG development. The Northern Cheyenne THPO visited the spring and concluded it was not culturally significant.

94. Comment: EA page 38, paragraph 2. There is mention of "Northern Cheyenne Plant collecting area" and the required location of these areas as well as assessment of effects of the POD to their National Register Eligibility. There are a determined number of culturally significant wetland and riparian plant species that are important for maintenance and preservation of Northern Cheyenne ethnology. A list of these plants can be provided from the Tribe. Whom is responsible for locating these plant species in the project area and, furthermore assessing impacts resultant from the CBNG activity? (18)

Response: A review with the Northern Cheyenne THPO did not identify any traditional plant collecting areas in the POD area. BLM is aware of the importance of plants along the Tongue River to the Northern Cheyenne. BLM notes that lists of the plants important to the Tribe are listed in Appendix D of the Northern Cheyenne Tribal Document, which is available on the Miles City BLM website. In the future, locating important plant species will be done in conjunction with the Northern Cheyenne cultural commission or the THPO.

95. Comment: EA-26 identified a spring as a sensitive cultural site to several Tribes in the area. The EA does not discuss whether drawdowns or development will adversely impact this spring. (13)

Response: The drawdown of the two wells would not adversely affect the spring. The wells are in coal seams below the scoria contact where the spring emerges. CBNG testing would not affect the spring flow. The Northern Cheyenne THPO visited the spring and concluded it was not culturally significant because the landowner had already developed extensively. The EA has been modified to include this information.

96. Comment: EA-35 concludes that the project may potentially impact cultural and historic resources including Native American Religious concerns. Therefore, the BLM must prepare an EIS (13)

Response: Based upon the cultural resource inventories, and an on-site visit with the Northern Cheyenne THPO, no TCPs or eligible sites were identified in the project area. The project would not affect historic properties eligible for listing on the National Register. The Decision Record/FONSI concluded that the approved POD will not result in significant impacts to the human environment (including impacts to cultural resources) and that preparation of an EIS is not required.

97. Comment: Onshore Order 1.III.E. Cultural Resource Clearance requires the operator to submit a cultural resources report by the 25th day of the 30-day APD processing period. When did Powder River Gas submit its cultural resource report to BLM? (13)

Response: Processing of this POD has been ongoing for considerably longer than the 30-day APD processing period cited. A draft cultural resources report was received from the PRG's cultural resource consultants at a meeting on August 11, 2003. The BLM provided comments to the consultants on August 15, 2003. The final inventory report to the BLM was received around August 18, 2003, over a year ago.

98. Comment: The draft EA does not identify or mitigate damage to or loss of cultural resources associated with ground or surface waters impacted by the proposed CBNG development. (19)

Response: On the ground surveys and consultations did not identify any cultural resources that would be affected by the proposed developments. No TCPs, including plant-collecting areas, were identified in the project area. There will not be any loss of cultural resources due to surface or ground water impacts.

99. Comment: There are a number of culturally significant wetland and riparian plant species that are important for maintenance and preservation of the Northern Cheyenne culture and tradition. Many of these plants are associated with the Tongue River and associated wetlands. The draft EA in no way addresses impacts to these very important cultural resources. (19)

Response: Loss of culturally significant wetland and riparian vegetation is predicted to be minimal throughout the project area because the majority of the project is located away from wetlands, infrastructure corridors are along an existing two-track road near the wetlands area along the river, and the outfall would affect less than an acre. The one spring in the project area was determined not to be culturally significant.

100. Comment: The EA notes that, for Alternative C, a prehistoric site was located and that no impact is expected to this site because is remote from any proposed disturbance. The next sentence refers to six 'isolates' found in the project area, but does not indicate if these six sites are likely to be disturbed or otherwise adversely affected. (See EA at page 26.) Are these six 'isolate' sites at risk due to any indirect activity such as off-road survey work? (20)

Response: Only one of the isolates may be affected; it is an abandoned car body adjacent to the infrastructure corridor to the 11-6 Well. It is not considered eligible for listing on the National Register. The other isolates would not be impacted by any of the proposed activities.

Geology and Minerals

101. Comment: On page 56 of the EA section 4.3.3. Geology and Minerals it mentions the venting of 22,680,000 cubic feet of gas during the project. Methane is a major contributor to greenhouse gasses in the atmosphere. How will this affect the environment? Won't this cause adverse health effects for those living around the project area and the thousands of people who recreate in the Tongue River Reservoir area? What about the fire danger from the release of all this methane in the valley during an extremely dry fall season? (6)

Response: To illustrate the volume of gas involved, 22,680,000 cubic feet of gas could be contained in a gas layer 10 feet thick over approximately 1,505 feet square. It is not likely that any of the wells will produce gas initially. Also, the gas venting will be limited to 1260 MCF per well and will happen over a six month period with only a small percentage of the total volume to be vented each day. The gas will disperse quickly as it is lighter than air (0.5-0.7 specific gravity with respect to air) and the danger of fire is extremely low. The venting/flaring of gas will have a negligible effect on the environment in the Tongue River watershed.

102. Comment: On page 14 and 15 there is discussion about flaring. What is the value of this methane that is lost for this testing? What about the loss of royalty revenue from the wasting of all this methane? On page 48 the volume of gas vented for this test is quite large. Is there any way to capture this gas and place it into the marketplace? With natural gas prices at \$5.00 a thousand cubic feet and if half of this methane is from federal wells and if the federal government would receive a royalty of 12 % this represents a loss of revenue for the federal government of \$6,804 (22,680,000 X 1/2 [since 1/2 the wells are federal] divided by \$5.00 per 1,000 cubic feet X 12% {royalty}). Will the federal and private lessors be compensated for this loss in royalty revenue? What about Big Horn County? This project generates no revenue for them, yet the costs for road maintenance and other services will increase. (6, 12)

Response: Under NTL-4A III. C. the lessee/operator may test a well during initial well evaluation tests for up to 30 days or the production of 50MMCF whichever occurs first, unless a longer period has been authorized. Because CBNG wells have to depressurize the coal before gas production begins, BLM is approving a longer test period but

a smaller volume of gas per well (1.26 MMCF). This testing can be done without incurring a royalty obligation so there would not be a loss in payment to the federal government (from federal wells) and no loss in dispersion of royalty from the federal government to the state. The private wells would be bound by their private lease terms concerning the payment of royalty for gas produced during testing.

If there were a royalty requirement, the value to the federal government of the gas lost during the testing of the wells is approximately \$6,300. This is calculated by assuming the following values: a maximum of 1260 MCF for 8 wells at \$5 dollars per MCF and a royalty rate of 12.5%. The value of the methane to the private lessors is unknown because the royalty rate of the private leases is not known by the BLM. The value of the gas lost during the testing is approximately \$113,400 if all the 18 wells would produce the maximum of 1260 MCF, and if the wellhead price of gas was \$5 per MCF.

The only way to capture the gas would be to have transmission lines built and the gas compressed to sales pressure and sold. As noted, the value of the gas lost during the testing is at most \$113,400. The cost of designing a pipeline and compressor station, installing the equipment, obtaining all the necessary permits and approvals, and then building the facilities would greatly exceed the value of the gas to be vented during the testing and is therefore not feasible. As an example, pipeline costs may run \$20,000 per inch mile, so if you have to have a 6 inch pipeline to run 5 miles to a sales line that would cost \$600,000. The closest sales line is in Wyoming which is over 10 miles away.

For the duration of the exploration and testing there may be a slight increase in road traffic. However, any increase in road maintenance costs for the county would be minor should they chose to perform additional maintenance.

103.Comment: Methane migration should be addressed in this EA. There is the danger of the CBNG migrating and venting. Right now there are places where the CBNG is venting under the Tongue River Reservoir as shown in aerial photos. Isn't there a danger of the CBNG migrating and venting in the areas where the Decker Coal and Spring Creek Coal mines are blasting? According the EA, there are several water wells and homes within and adjacent to the Project. Of the wells identified in the project area, how many are likely to be impacted by migrating methane? What other conduits exist in the area, like abandoned oil and gas wells and ground water monitoring wells, where methane could migrate? Methane migration from existing development at the CX Field has accumulated in the basement of at least one home, propelled water 30 feet into the air from a domestic well, seriously injured one worker at the CX field, migrated into numerous ground water monitoring wells. The EA ignores the issue of underground movement of explosive and potentially lethal methane gas into homes and wells, despite obvious risks to human health and safety. Methane migration resulting from CBM production has numerous impacts: It can migrate to water wells, migrate up abandoned oil and gas wells, create explosive hazards for workers and people living near development, and kill native vegetation and wildlife, none of which are addressed by BLM in the EA. (12, 13, 14)

Response: Geologic maps prepared by MBMG show that the Tongue River Reservoir is underlain by coal and clinker deposits as well as a fault. It has not been determined if the gas is a result of natural venting or is the result of nearby mining and CBNG production activities.

The EA has been modified to include a discussion on the potential for methane migration. The mines are mining the Smith-Anderson-Dietz coal beds while the PRG exploration project will be testing the Wall and Flowers-Goodale beds, which are below the coal beds being mined. Because the test is limited to six weeks, and is testing a different coal bed than that being mined, the danger of methane migration from the PRG project to the Decker or Spring Creek mines is extremely low.

A study completed by the Reservoir Management Group of the Casper BLM office indicated that the pressure in the coal seams would have to decline between 10 to 40 percent before gas would begin to desorb from coals in the Powder River Basin. The initial pressure in the Wall coal (the shallowest coal to be tested) is approximately 124psi to 275 psi. This means that the pressure in the Wall would have to be reduced by at least 12.4 psi and possibly as much as 27.5 psi before gas would begin to desorb. The 20 foot drawdown radius within the coal beds being tested would extend approximately 0.4 miles and would result in a pressure decline of approximately 8.7 psi at 0.42 miles. An 8.7 psi reduction in pressure would not be enough to cause gas to desorb from the coal bed being tested.

Because the mines are more than 3 miles away from the project area and mining different coals therefore this project will have no effect on the mines.

There are no abandoned conventional oil wells within the project area. The nearest plugged conventional well is located in the NW¼SE¼ of Section 18 T.8 S., R. 41 E., over 1 mile away from any proposed CBNG well. This well was plugged in 1960 with cement plugs including a plug at the base of the surface casing from 160 to 220 feet and one inside the surface casing at the surface. Because the casing that was set in the well has been plugged with cement and the 20 foot pressure drawdown will reach only 0.42 miles from the proposed wells there would be no migration of CBNG up this plugged well.

104.Comment: The BLM needs to compile a list of mitigation measures to address methane migration impacts, including a plan for monitoring methane levels in soils, wells, and other conduits. By not considering much less requiring mitigation measures to address the dangers created by methane migration and venting, the BLM is violating Onshore Order 1.I. (13)

Response: The BLM has evaluated the potential for methane migration and added a section on this topic to the EA. The potential for this project to cause methane migration such that it would impact area soils and wells, or create a safety hazard, is negligible. The development of additional mitigating measures to address methane migration is not warranted.

105.Comment: The Montana Bureau of Mines and Geology has posted cautionary warnings on their website to warn field personnel of the methane migration danger, yet BLM mentions none of these impacts. The impacts that such migration *may* have on the safety of people living and working in the area mandates that BLM prepare an EIS. (13)

Response: A section on methane migration has been added to the EA. The potential for this project to cause methane migration which would pose a hazard to the safety of people in the area is extremely low due to the limited duration of the testing and the coal bed being tested.

106.Comment: Is there a possibility of subsidence in this area which could destroy the Tongue River Reservoir? (12)

Response: A study completed by the Wyoming Geological Survey indicated that surface subsidence from CBNG production would be minimal (possibly ½ inch) over the producing life of a gas field. The six month duration of this project will cause no observable subsidence.

107.Comment: Section 3.3.2, The coal geology discussion (pg. 36, 3.3.2) is absent substantive content on geologic structures such as regional dip and faulting. This is necessary to provide the hydrogeologic framework and context to interpret the modeling of drawdown from this project and potential cumulative drawdown, including other neighboring projects. Potential effects to certain wells or springs is discussed in Chapter 4 by referencing the elevations of the well producing zone or spring to that of the Wall and Flowers-Goodale coal beds. However, without consideration of geologic structure, such attempts at correlation may be incorrect. (16)

Response: A general discussion of the geologic structure in and around the project area has been added to the EA. Geologic faulting was previously recognized as a factor which influences groundwater movement in the region in this project Hydrology Technical Report (Bobst, 2004).

108.Comment: Section 3.3.2, Preliminary geologic data indicate that the Wall coal may have a regional dip of about 1.38%, or 73 feet per mile, to the south-southeast. Thus across the PRG project area, the elevation of the top of the Wall coal may vary over 140 feet. (16)

Response: A general discussion of the geologic structure in and around the project area has been added to the EA. Geologic structure and faulting is recognized as a factor which influences groundwater movement in the general area.

109.Comment: Section 3.3.2, The Geologic Map of the Birney Quadrangle (MBMG, 2001) has a major fault mapped approximately 1.5 miles southeast, and another mapped fault approximately 2.4 miles north of the PRG project area. Since these features (and possibly other unmapped structures) could influence the extent of drawdown in the coal aquifers, they warrant being referenced and discussed in this section of the EA. (16)

Response: A discussion concerning the geologic structures in and around the project area has been added to the EA. Geologic faulting is recognized as a factor which influences groundwater movement in the general area and has been incorporated into the EA. While the extent of the faulting (amount of offset) has not been defined, their distance from the project area, combined with the short duration of pumping, makes it unlikely they could influence the extent of groundwater drawdown in the coal seams being tested.

Hydrology

110.Comment: No baseline water quality information for this section of the Tongue River is provided. I do not believe the statements in the EA about the stable quality of the water coming from Wyoming. The Tongue River has seen an increase in SAR and EC levels in the past number of years (since coal bed methane development has occurred in Wyoming). At a minimum, baseline water quality data that is available from the 1970s should be used along with water samples collected more recently in order to fully understand the water quality of the river in order to monitor the impacts of current and proposed discharges into the river. (5, 23)

Response: Baseline water quality information for this section of the Tongue River is provided in EA section 3.4.1, Table 3.4.1-2. As discussed in the accompanying text, this table includes data from 1975 to 1998 for the station below the Dam, and data from 1978 to 1998 for the station near Birney Day School (pre-CBNG development). The effects of CBNG produced water discharge are then added to this baseline as discussed in the EA, and the Hydrology Technical Report (Appendix A).

Monitoring data since 1998 have shown that EC and SAR values have been above average; however when these values are assessed in relation to stream flow there does not appear to be an appreciable increase in either EC or SAR. Rather, the high values observed are in line with expected values given the ongoing drought. This is consistent with the position that the WY-DEQ has taken in the Tongue River watershed, which is to not allow any direct discharge into the Tongue River (FEIS, Hydrology Appendix). For these reasons, it is considered to be appropriate to treat CBNG development in Wyoming as non-discharging, and, therefore not having an effect on water quality in the Tongue River. The Hydrology Technical Report has been modified to clarify this issue (See Appendix A).

111.Comment: If wastewater is not reinjected, how will aquifer drawdown impact the Tongue River Reservoir and its level? Will water from the reservoir "leak" downward and end up being pumped out of the coal bed methane wells and not be available for irrigation by owners of the water? (5, 11, 12)

Response: As discussed in section 3.4.2 of the EA, the coal seams being proposed for testing are the Wall and the Flowers-Goodale. The Wall is the upper unit, with its top being at an elevation of approximately 3,200 feet above mean sea level (ft-amsl). The base of the Tongue River Reservoir at the Dam is at an elevation of approximately 3,380 ft-amsl (See Hydrology Technical Report, Map-1). As such the coal seams to be developed do not intersect the Tongue River Reservoir. As discussed in section 3.4.2 of the EA, "Due to the common clay rich layers in the Tongue River member of the Fort Union formation, the vertical hydraulic conductivity in these units is very low." Section 4.2.4 of the EA also states that only "those wells and springs, which are located within the area of drawdown, and which receive their water from the coal seam being pumped, may be affected by this drawdown." The reason for this is that the vertical hydrologic conductivity of the Tongue River member of the Fort Union

formation is very low, making the coals confined aquifers. The confined nature of the coal seam aquifers is also discussed in detail in Appendix C of the Hydrology Technical Report. As such, the drawdown is limited to the coal seam being developed. For this reason any aquifer drawdown would not cause water to flow out of the Tongue River Reservoir. Sections 4.2.4 and 4.3.4 of the EA and the Hydrology Technical Report have been modified to clarify this point.

112.Comment: If wastewater is not reinjected, how will the increased surface discharges impact the alluvium and riparian areas of the river? (5)

Response: Since the quality of the Tongue River will be protected through the MPDES permit process, and the increase in flow that would result from this project would be only ~4% of the 7Q10 flows, it is not anticipated that the quality or quantity of discharged water will impact riparian areas or alluvial groundwater.

113.Comment: I also see that "the operator has proposed a variety of potential beneficial uses for the treated water". What specifically are these uses? The EA is very vague about what specifically these uses will be. Are these speculative uses? Will the operator be granted water rights for this water? Since when did a mineral right convey a water right for the produced water? If the landowner can use the water, the landowner should be allowed to get a water right for water that they can put to a beneficial use. To give the methane companies the water rights allows them to become agents of this water and have the ability to sell it along with the methane; this should not be allowed in any circumstance. (6)

Response: Following the Higgins Loop processing, the treated water would enter the remaining pit chamber prior to discharge into the Tongue River. Primarily, the treated water would be discharged into the Tongue River; however the operator has proposed a variety of potential uses for a minimal portion of the treated water including, dust abatement, drilling activities, vehicle wash-downs, and during construction activities. Individual landowners could also file for beneficial use of the treated water for livestock or irrigation.

Mineral rights do not convey water rights. Under the Powder River basin Controlled Groundwater Area designation, "the withdrawal of groundwater associated with coal bed methane production will be under the prior jurisdiction of the Montana Board of Oil and Gas. However, water rights matters and hydrologic issues are not within the ordinary technical expertise and area of concern to the Board. These matters are ordinarily dealt with by the Montana Department of Natural Resources Conservation and the Montana Bureau of Mines and Geology. The Montana Department of Natural Resources may petition the board of hearings in regard to the production, use, and disposal of water from coal bed methane development wells that could affect existing water rights in the area based upon information gathered concerning water withdrawals." (MT-DNRC, 1999). The groundwater belongs to the state (i.e. state water), thus the decision for whether or not to grant a water right is a determination that would need to be made by the state. If the produced water is put to a beneficial use, water rights would need to be obtained from the MT-DNRC as a separate issue from the permits for gas development.

114.Comment: Both surface and underground water supplies will be greatly degraded by the current proposal to mix clean with untreated water. This would introduce intolerable sodium and salinity levels into water essential to livestock, agriculture, and wild animals. (7)

Response: After the treated and untreated water are mixed, the resulting discharge would have an SAR of 3 and an EC of approximately 742 $\mu\text{S}/\text{cm}$ (section 4.2.4 of the EA, and the surface water analysis has been modified to use these values). This discharge meets the surface water quality standards for EC and SAR set by the Montana Board of Environmental Quality at the end of the discharge pipe. As such, these discharges will not cause the standards for EC and SAR to be exceeded. As shown in Table 2.5-2, the maximum potential cumulative discharges at low monthly mean (LMM) flows would cause the SAR to increase from 1.23 to 1.28 (a 4% increase) and cause EC to increase from 737 $\mu\text{S}/\text{cm}$ to 740 $\mu\text{S}/\text{cm}$ (a 0.4% increase). These discharges would not cause sodium (as measured by SAR) or salinity (as measured by EC) to become intolerable for livestock, agriculture, or wild animals.

115.Comment: It is essential that the BLM survey and document baseline water levels, current usage, and future needs of livestock, people, wild animals, and agriculture in this area before considering approval of this terribly destructive project. (7)

Response: As discussed in the EA in section 4.2.4, MBOGC Order 99-99 requires that CBNG operators monitor water sources. This order also states that “hydrologic conditions in the targeted coal beds must be assessed prior to field development to establish baseline conditions.” This order also requires the “...prompt supplementation or replacement of water from any natural spring or water well adversely affected by the CBM project...” Thus, the CBNG operator must survey and document baseline water levels prior to field development. The EA has been modified to clarify this issue.

An analysis of current water usage in the area is provided in the MT FEIS (pages 3-27 to 3-28), which is the base document this EA is tied to. An analysis of potential future water uses by livestock, people, wild animals and agriculture is not ripe for consideration, and any such analysis would be speculative at best and outside the scope of the PRG exploration project EA

116.Comment: The surface water model adds the full load allocation from the current Fidelity MPDES permit to baseline conditions to represent "Existing Conditions" and then adds the full load allocation for Fidelity's treated water application to simulate potential impacts. However, the Fidelity MPDES permit renewal application calls for a flow based discharge approach that would minimize discharge of untreated water under low flow conditions. During low flows more water would be shifted to the treatment system. The model therefore overestimates baseline conditions at the PRG outfall as well as overestimating cumulative impacts. The model should be revised to consider various flow-based discharge scenarios. (9, 14)

Response: The existing permit is for 1,600 gpm discharge. As this is the permit in place at this time, it is the one included in this analysis. The analysis of the proposed modification of this permit to a flow based scenario is not ripe for consideration since the MDEQ has not completed its analysis of this proposed modification. The numerical meaning of “flow-based” is numerically unclear at this time and any attempt to model this scenario would be similarly uncertain. The new Fidelity discharge permit would have the potential to discharge at 1,700 gpm, therefore that is the value used in the cumulative analysis for the EA.

117.Comment: The surface water model over predicts water quality effects in the Tongue River at Birney Day School. As described in the model calibration section, the model predicts water quality in the Tongue River at Birney Day School by simply adding an increase in EC and SAR to the results from the station below the dam to match the historical increases observed between these two stations under similar flow regimes. The present increases in EC and SAR of the Tongue River at the Birney Day School is principally due to the influence of Hanging Woman Creek, which contributes high TDS water to the Tongue River. Since the TDS of treated CBNG water is better than the tributary water in Hanging Woman Creek, a mixing analysis should show an improvement in downstream water quality with the addition of PRG's discharge. The model, however, does not do a true mixing analysis at this station, instead it simply assumes that the EC and SAR of the Tongue River at Birney School will increase by the same amount as the Tongue River below the dam. This incorrectly predicts downstream water quality changes. Although there is no indication of impacts using this analysis, the results do not accurately represent cumulative impacts from development of CBNG resources in the area. (9, 14)

Response: It is agreed that Hanging Woman Creek typically contributes water to the Tongue River which has a higher TDS and a higher SAR than the Tongue River below the dam; however the effects of Hanging Woman Creek are not explicitly modeled in this analysis. Rather the effects of the contribution of all tributaries are included in the analysis by using the changes in water chemistry observed on the main stem of the Tongue River. The Hydrology Technical Report has been modified to clarify this point.

In a simple mixing model, the discharge of water that has a higher EC and SAR than currently exists at a station upstream from the station being analyzed will cause the EC and SAR to increase regardless of the other factors that cause the water to have its current chemistry. This can be viewed as the mixing of three buckets of water; one for the Tongue River below the Dam, one from all tributaries, and one from the PRG project. The existing conditions at

Birney Day School during low monthly mean (LMM) flows (Modeled Existing EC and SAR are 737 $\mu\text{S}/\text{cm}$ and 1.23 respectively; see Table 3.4.1-2 of the EA) result from the mixing of the first two buckets. The PRG bucket has a higher EC and SAR than the existing conditions (EC=742 and SAR = 3.0); therefore, the addition of this bucket to the mix causes the EC and SAR to increase. If this water were hypothetically added to Hanging Woman Creek, it would cause the EC and SAR of Hanging Woman Creek to decrease; however the net result at the Birney Day School Station on the Tongue River would be the same.

For these reasons, the surface water model correctly predicts downstream impacts, and this technique gives an adequate representation of the cumulative impacts which may result from CBNG development in the project area.

118.Comment: There is a second concern with water quality calculations for the Tongue River at Birney School. The EC predicted for the 7Q10 flow is significantly higher than water quality records indicate for this historical flow regime. EC values reported for the Tongue River at flows less than 100 cfs are consistently below 1000 $\mu\text{hos}/\text{cm}$ and average 813 $\mu\text{hos}/\text{cm}$. The highest EC readings are at a flow regime of approximately 190 cfs. This may be related to the fact that the EC of the river is influenced largely by discharge from Hanging Woman Creek. During low flow periods, this tributary is dry or flow is minimal and therefore EC of the Tongue River is lower than at slightly higher flow regimes. We suggest revisiting the methodology used to project water quality at this station. (9, 14)

Response: The observed maximum EC value for the Tongue River at the Birney Day School station (1,080 $\mu\text{S}/\text{cm}$) was observed at a flow of 193 cfs; however this is just one data point. The data at Birney Day School is somewhat scattered; however the overall pattern of increasing EC and lower flows is apparent. There may be other factors which cause minor modification to this basic pattern; however, given the inherent uncertainty associated with such data, and the relatively simple power function used, the analysis is considered to be appropriate to depict water quality at this station. The Hydrology Technical Report has been modified to clarify this point.

119.Comment: The surface water model discussion indicates that appropriate EC and SAR values were established for 7Q10, LMM and HMM flow regimes by fitting a power equation to graphs of historical flow and water quality data. However, use of a power function to predict water quality trends at lower flow regimes will tend to overestimate concentrations. A similar modeling approach was developed by Dr. William Schafer and submitted to DEQ in support Fidelity's MPDES permit renewal. Schafer, however, found that water quality trends are relatively constant under low flow regimes when baseflow accounts for the majority of the flow. Water quality in the Tongue River only begins to show a significant trend with discharges above a certain threshold (i.e. approximately 200 cfs for EC) when significant amounts of runoff and interflow begin to make up the discharge. A trend analysis using a straight power function would likely overestimate concentrations of particular parameters under 7Q10 flow conditions. The Surface Water Modeling Section presently does not include any supporting information for the trend analysis. This information should be added to the report and there should be a comparison of model predictions to actual data within that flow regime (i.e. mean concentrations) for typical flows included. (9, 14)

Response: Overall, the use of the power function is felt to be an appropriate method for determining surface water quality values. The scattered nature of the data, and the lack of low flow data would make a more refined analysis of low flows suspect, and therefore the relatively simple power function relationship is appropriate. Appendix A of the Hydrology Technical report has been modified to clarify this issue.

120.Comment: The EA does not do an adequate job of discussing the limitations of their modeling approach. In a number of cases the EA makes conservative assumptions that will tend to over predict potential impacts from the proposed project. While a conservative approach is generally appropriate for assessing impacts, it is important to qualify these assumptions and indicate where the predictive results may be inaccurate or unrealistic. The combined effects of these various assumptions may significantly over predict the potential for impacts, particularly in the case of long term cumulative effects. The discussion of

the results needs to be qualified accordingly. Where possible, the model predictions should be compared to observed trends from existing CBNG wells in the area to assess the accuracy of the results. (9, 16)

Response: Sections 4.2.4 and 4.3.4 of the EA, and the Hydrology Technical Report, have been modified clarify these limitations and to reference current monitoring data.

121.Comment: The evaluation of groundwater impacts relies on a simplified Theis analysis to predict short term and cumulative drawdown effects for each alternative. This is a very simplistic method for predicting drawdown, and is more applicable for evaluating effects in the immediate vicinity of a well. At increasing distances the Theis predictions are subject to significant error due to the simplifying assumption that there are no hydrologic boundaries limiting the extent of drawdown effects. Available geologic and potentiometric data for this area show the presence of numerous faults, discontinuities in coal bed strata and other complex hydrologic boundaries that limit the extent of drawdown from wells in this area. The discussion of impacts needs to more clearly explain these limitations and note that this method of analysis may over predict drawdown effects in outlying areas. The BLM should ensure that it qualifies the results by acknowledging which basic assumptions of the methodology are not met, and incorporating scientifically sound interpretations of how the actual hydrogeologic conditions likely affect the results. (9, 16)

Response: The Theis method of analysis may over predict or under predict drawdown effects in outlying areas. The Theis equation provides an average drawdown radius assuming no flow boundaries, isotropy, and homogeneity. If a flow boundary (such as a fault) is encountered, the extent of drawdown in that direction will be truncated, however, the cone of depression will extend asymmetrically away from the flow boundary, causing the extent of drawdown away from the flow boundary to be greater than calculated by the Theis method. In a fault block (flow boundaries on all sides), the drawdown would be limited in all directions; however, the magnitude of drawdown within the block would be greater than calculated. Sections 4.2.4 and 4.3.4 of the EA, and the Hydrology Technical Report have been modified clarify this issue and to reference current monitoring data.

122.Comment: Drawdown is calculated by the Theis analysis, assuming that all wells finished in a coal seam can be approximated by one well. The predicted drawdown is then applied to the exterior boundary of the POD. If the wells are distributed over a large area this will significantly over predict drawdown effects. The discussion in the EA simply indicates that this is a conservative assumption, but provides no meaningful basis to evaluate just how conservative this assumption is. Since the number of wells proposed for this project is not that great (16), it would be relatively simple to base the Theis analysis on the more accurate actual distribution of the proposed wells. (9, 16)

Response: In order to address this concern, a simple 2D MODFLOW model of the Wall coal seam was prepared for the proposed action. This model also assumed a confined aquifer with homogeneity, isotropy, and no flow boundaries. The geometric mean hydrologic conductivity of 1.1 ft/day and a storativity of 9×10^{-4} were used. The edges of the model were modeled as constant head cells, and the model was large enough to have minimal edge effects. Initial aquifer conditions were determined using data from MBMG MONITORING WELL * CBM02-4WC, which is completed in the Wall Coal approximately 1.4 miles from the proposed well field. Each proposed CBNG well was modeled with a constant head cell where the head was set 5 feet above the top of the coal seam.

This MODFLOW model showed that after 6 weeks of pumping the radius of the 20' drawdown contour would extend approximately 0.19 miles (999 feet) from the edge of the field, and the average well pumping rate was 19.5 gpm. In the initial EA, the model used indicated that the 20' contour would reach 0.41 miles from a single well intended to simulate the effects of the well field, then this radius was conservatively applied to the exterior of the field. Mathematically, this radius should be applied from the center of the field; however, if this radius is applied to the center of the field rather than the exterior some of the wells which it is supposed to represent are not included in the drawdown area. This simplification makes comparison of the two methods difficult. The difference in these estimates also stems from the underlying assumptions of the different methods used. The Theis equation assumes that there is no source of recharge to the aquifer (Fetter, 1994) while the MODFLOW model assumes that the edges of the model can be modeled as constant head cells. The establishment of constant head cells requires that water be

flowing in to offset the removal of water by the wells; other wise the drawdown cone would just continue to become larger over time. As recharge zones for these aquifers clearly do exist (Wheaton and Metesh, 2002), the use of constant head cells is justified.

When these models are compared after 168 days (~5.6 months), the MODFLOW model indicates that the 20' contour would extend approximately 0.43 miles from the well field while the Theis method indicates that it would extend approximately 0.55 miles. After 6 months, the Theis method indicates that the 20' contour would extend 0.57 mile from the well field.

Overall, the Theis method predicts a greater radius of drawdown than the MODFLOW approach. After 6 weeks of production, the difference in these methods is approximately 116% (0.19 vs. 0.41 miles). After 168 days, the difference is approximately 28% (0.43 vs. 0.55). It is felt that this more conservative approach is justified given the uncertainty associated with the hydrogeology are this region, particularly with respect to faults which would be anticipated to function as flow barriers. As discussed in section 4.2.4 of the EA, the Theis method provides an average distance that drawdown would be expected to extend from a hypothetical well. If flow boundaries are present, then the drawdown cone will be truncated by the boundary, and extend further in the directions away from the boundary. For this reason, the Theis method continues to be used for this analysis, and sections 4.2.4 and 4.3.4 of the EA have been modified to clarify the conservative nature of this approach.

123.Comment: Hydrology Technical Report, Page 17, the first paragraph states that the initial production rate for the PRG wells is predicted to be 25 gallons per minute (gpm). The assumed production rates for the PRG wells and the estimated decay rates over time appear to be significantly higher than are typical for existing CBNG wells in this region. The basis for these estimates should be reexamined based on available data from CBNG wells in this area. If production rates are more similar to existing wells, associated drawdown effects will be significantly less. Up to this point, neither the Wall nor Flowers-Goodale coal beds have been pumped extensively. Based on experience elsewhere in the northern Powder River Basin, the initial yield from Flowers-Goodale coal would probably be less than 5 gpm. Consequently, we anticipate that the higher initial production rates proposed for this project will result in estimated potential drawdown in the subject coal beds that will be greater than historically observed in other producing coal beds. The basis for the production rates and estimates of potential drawdown should be re-examined and properly qualified. Fidelity's annual groundwater reports indicate potential drawdown effects within and surrounding the producing areas that are significantly less than estimated by the MT FEIS. (9, 16)

Response: The assumed production rate of 25 gpm is that cited by PRG in their proposed POD. This value is also consistent with the rate calculated for the Wall coal from Theis calculations to drawdown the water level to near the top of the coal seam (24.7 gpm over the first 7 days). It is difficult to predict the production rate that will be needed to produce the Flowers-Goodale coal seam in this area since it is a thinner coal seam than the Wall (20' vs. 55') but would be expected to require more drawdown to bring the static water near the top of the coal seam. As such, the 25 gpm rate is a reasonable estimate for the Flowers-Goodale until actual information from this coal seam is available. The 20% per year decline is that cited by PRG in their POD proposal, and is consistent with the values for other fields, and consistent with the values used in the MT FEIS. For example, the equation used in the MT FEIS is equivalent to a 23% per year decline in the pumping rate.

124.Comment: The EA contains no surface water quality data for Parameters of Concern other than EC and SAR. (10)

Response: That is correct. As stated in section 3.4.1 of the EA "Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR) are the parameters most likely to be affected by CBNG development (MDEQ, 2003), therefore, the discussion in this document will focus on these parameters." An analysis of the potential for exceedence of all surface water quality criteria is included in the statement of basis (SOB) (Hydrology Technical Report, Appendix B). The EA has been modified to clarify this issue.

125.Comment: The list of impacts that are not addressed in the EA include TSS levels in the Tongue River (10)

Response: Suspended sediment is included in the list of parameters evaluated in the SOB (Appendix B of the Hydrology Technical Report). This analysis was not brought forward to the EA since the Tongue River is not impaired for sediment, and the SOB indicates that suspended sediment does not have the potential to exceed the non-degradation criteria. The soils portion of this EA also shows that the disturbance “would be a short term, minor impact with expedient, successful reclamation and site-stabilization, as part of the operator’s proposed POD. As such, impacts to TSS are not anticipated to result from the proposed action or any of the alternatives, and are not analyzed in detail.

126.Comment: The list of impacts that are not addressed in the EA include whether the proposed water treatment is effective in removing constituents such as ammonia, arsenic, barium, bicarbonate, sodium, fluoride, selenium; etc. Does this process remove these potentially harmful constituents as well? (6, 10)

Response: As stated in the EA (Section 2.2.3), “The primary objective in treating CBNG produced effluent is removal of sodium (Na^+) in order to reduce SAR levels. In addition, some situations may require the removal of barium and other heavier cations in order to meet MPDES discharge requirements.” Bicarbonate is also removed in this process due to the need to maintain charge balance.” Treated and untreated water analysis in the POD book for this project show a reduction of bicarbonate from 930 mg/L to 289 mg/L by treatment. Sodium is decreased from 369 to 1.1 mg/L, EC is reduced from 1,380 to 493 $\mu\text{S}/\text{cm}$, and calcium is increased from 2 to 126 mg/L. This system would not directly effect ammonia or fluoride concentrations. An analysis of these parameters is not included in the EA since the SOB analysis indicates that there is not the potential to cause exceedence of the criteria for these parameters.

127.Comment: We also believe that the 0.48-mile distance of concern for affected water is insufficient given that studies have shown water and water availability can be affected miles from the subject development. The geology of this area includes extreme fracturing such that no one can confirm how the removal of large quantities of water will affect the greater area surrounding the proposed development. (11)

Response: The 0.48 mile average radial distance around the project is that area that would be predicted to have 20 feet or greater of drawdown as a direct result of the proposed action after 6 weeks of pumping. Due to changes in the proposed action, this has been modified to 1.11 miles from the well field after 6 months of pumping. Studies which have shown drawdown several miles from CBNG projects are based upon a longer period of pumping. For example, the study completed in support of the MT FEIS (Wheaton and Metesh, 2002) was for a hypothetical CBNG field with 1,082 wells producing for 20 years. This study concluded that “Drawdown of more than 10 ft within the coal aquifers can be expected to reach 1 to 2 miles outside the producing fields during the early years of production and distances of 5-10 miles, or more, during long-term production.” Recent monitoring (Wheaton and Donato, 2004) indicates that, “After 4 years of production from the CX field, water levels have been lowered by 20 feet at distances of less than 1 mile to as much as 2 miles outside the production area.” These results are consistent with the results of the cumulative impact analysis in this document which indicates that “the cumulative 20’ drawdown contour may extend up to 4.7 miles from the project area after 20 years” (EA, section 4.3.4). Please note that a 20’ drawdown contour will not extend as far as a 10’ contour. It is also recognized that the faulting in this area makes calculation of the extent of drawdown difficult. This issue has been further clarified in sections 4.2.4 and 4.3.4 the EA.

128.Comment: On page 14 and 15 the chemical reactions of the water processing are discussed. At one point there is carbon dioxide gas created. Is there a barrier to prevent the carbon dioxide from overwhelming personnel or wildlife or stock that get near the pond? There is also discussion about hydrochloric acid used in the process. Is the acid treatment area shielded from access? There are lots of visitors to the Tongue River Dam and there could be the possibility of children accessing this area while visiting the dam. Is the treatment area kid proof? Will birds be kept from the area? (12)

Response: The entire treatment facility will be fenced to prevent wildlife/human interaction. The acid used for the treatment process will be contained within this fenced area in two closed tanks, surrounded by a shallow spill containment berm. The entire area will be posted as to the hazard.

129.Comment: On page 27 water quality maximum levels are shown- The existing quality in the Tongue is already exceeding these levels. This level needs to be shown at Miles City as this is the place that will determine if standards are met. The standards are currently exceeding the monthly averages at Miles City. How will this discharge decrease the load in the Tongue River and help to meet the water quality standard at Miles City? (12)

Response: Monitoring data from the Tongue River at Miles City USGS Station (06308500) show periodic exceedance of the average monthly standard for electrical conductivity (EC) (1,000 $\mu\text{S}/\text{cm}$) since 1975. Most of these exceedances are observed during periods of low flow in the river. The 2002 Montana 303(d) list reports the river is as impaired due to flow alternation in the segment below the diversion. A significant portion of the river, up to 200 cfs is diverted to the Tongue River Diversion Dam during the irrigation season. The proposed discharge is to the Tongue River above this diversion and meets the applicable water quality standards for EC and SAR at the point of discharge and downstream and becomes indistinguishable after mixing. Because a large portion of the mainstem including the discharge is diverted, the discharge will not significantly affect the river below this point. The quality of the Tongue below the diversion is influenced by other factors more than the chemistry of the mainstem. The proposed discharge will not significantly affect the source of impairment in the lower river, which is flow alteration.

130.Comment: On page 40 of the EA the modeled condition of the Tongue River at Birney Day School is an EC of 1157. This exceeds the numeric standard of 1000. How can any discharges be added since the existing modeled condition for low flow is already exceeding the standard? (12)

Response: The Total Maximum Daily Load (TMDL) Status Report (Tetra Tech, 2003) lists the historic average EC of 808 $\mu\text{S}/\text{cm}$ with a maximum value of 1,080 $\mu\text{S}/\text{cm}$ for this site. The 1157 $\mu\text{S}/\text{cm}$ value in the Table is based on model results that tend to over predict the actual value. Modeling is necessary due to the lack of actual data at the 7Q10 condition. Since the 7Q10 is a short duration condition, the instantaneous maximum standard is considered to be the more applicable standard for comparison purposes. The instantaneous standard for EC is 1,500 or 2,500 for the irrigation season and non-irrigation season respectively. Accordingly, the proposed discharge will not result in a violation of either standard.

131.Comment: On page 41 there is reference to the MT FEIS for 2D and 3D modeling. This area needs to have its own modeling to determine drawdowns. Will modeling be done for this development? (12)

Response: Groundwater modeling was done for the project area as discussed in the EA and Hydrology Technical Report. This modeling was less complex than that done for the MT EIS, however, the level of analysis is appropriate.

132.Comment: On page 46 there is a grid showing the water quality with the addition of this development. Why is there a grid showing discharges when there will be none with the no action alternative? (12)

Response: There would be no direct or cumulative impacts from this project under the no action alternative, however, there would be impacts from the other actions considered in this analysis. These include the existing and proposed Fidelity CBM discharges upstream of the Tongue River Reservoir.

133.Comment: On page 49 the grid is showing violations to the standards during low flows. The standards are currently being violated at Miles City. Why would a project be approved that degrades the water even further? (12)

Response: Table 4.2.4-2 (Cumulative Impacts from Alternative B) shows that the EC during 7Q10 flows is greater than the mean monthly standard, however, as stated in section 3.4.1 of the EA, “For the purposes of this impact analysis, the high mean monthly and low mean monthly results will be compared to the mean monthly standards, while the 7Q10 result will be compared to the instantaneous maximum standards. This is appropriate since the 7Q10 is the lowest flow that would be expected to occur for 7 consecutive days over any 10 year period”. Therefore, as stated in Section 4.2.4 of the EA “Comparison of the direct resultant water quality values for the No Federal Action alternative to the appropriate standards shows that during HMM and LMM flows, none of the mean monthly standards are exceeded. During 7Q10 flows, the instantaneous maximum standards are not exceeded.”

134.Comment: The "Proposed Action" and "No Federal Action" alternatives propose pumping CBNG wells and discharging treated water at rates of 450 gallons per minute (gpm) and 250 gpm, respectively, for up to six weeks. The hydrologic analysis and modeling efforts should be consistent with those discharge amounts and the duration of the action, and not estimate potential effects from a hypothetical CBNG development for up to 20 years. (14)

Response: The direct impacts are calculated for 6 weeks of pumping using these pumping rates. The analysis also needs to consider the potential for cumulative impacts. In this case the analysis assumed a potential production scenario from these well sites in order to address the cumulative impact potential. Although included in the analysis, this does not mean that BLM is approving production from these wells or saying these cumulative impacts would automatically occur from approval of the exploration plan.

135.Comment: Produced waters discharged upstream of the subject project, and the assimilative capacity of the Tongue River Reservoir and its effect on water quality conditions in Tongue River downstream of the reservoir should be considered and discussed in detail. (14)

Response: Upstream discharges and the Tongue River Reservoir are discussed in detail in Appendix A of the Hydrology Technical Report. This discussion has been modified for clarity.

136.Comment: Page 28, of Table 2.5-1 contains a section on 'Water Quantity Cumulative Impacts', and a row, entitled, "# of domestic or stock wells within the 20' drawdown area (with 20 years of pumping) and potentially completed in the producing coal seams". The number, 1, is shown under both Alternative B and Alternative C. Based on the discussion of Chapter 4, we assume that this one well refers to the Kinnison domestic well. For reasons we discuss further in our comments under Chapter 4, we believe that if this well is referenced in this table, it should be qualified that no lithologic information exists for this well and the source aquifer supplying it is unknown. (16)

Response: This issue is discussed in detail in Chapter 4. For the table in Chapter 2, it is considered to be appropriate to state that it is “potentially completed in the producing coal seam” due to the source being unknown.

137.Comment: The Groundwater section (p. 39, 3.4.2) should include a more detailed discussion of the hydrogeologic factors influencing the interpretation of the drawdown modeling. A brief discussion on the layered nature of aquifers and confining units within the Fort Union Formation would be appropriate. The general geometry of coal and sandstone aquifers, including degree of continuity, thickening and thinning should be presented, and specific local examples offered where feasible. For example, the Wall coal is known to split into two thin beds just south of the PRG project area, raising the question whether the Wall coal is a viable aquifer south of the PRG project, and hence the interpretation of potential effects of pumping production wells. (16)

Response: A more detailed description of the interbedded nature of the Tongue River member of the Fort Union formation has been added to the EA. A discussion concerning the effects of flow boundaries (such as faults) has also been added.

138.Comment: Section 3.4.2, In the fourth paragraph, reference is made to the GWIC database of known wells, springs and borings in Montana. However, no discussion is provided to identify the aquifers, or general intervals in the Fort Union Formation, which likely supply the water to the wells and springs of the POD area. This would be valuable context for the potential impact evaluation of Chapter 4. (16)

Response: The GWIC database typically only identifies the aquifer for domestic and stock wells as being the Tongue River member of the Fort Union formation. As such this aquifer information would be of little value. The lithology information from this database is more useful, and has been incorporated where available.

139.Comment: A statement on page 48 (1st paragraph), states, "If drawdown is experienced in a water well it would cause the yield of a well to be decreased." We suggest that this statement be modified or qualified. The yield of an existing water well may decline if the existing well is completed in one of the coal bed aquifers subsequently produced for gas, and the area of significant drawdown (20 feet or more) encompasses the private well. However, it should be acknowledged that the yield of some water wells completed in coal beds that lie within the area of CBNG production may be more limited by poor well construction and operation than by effects from CBNG production. The same comment goes for Alternative C. (16)

Response: Section 4.2.4 of the EA has been modified to clarify this issue.

140.Comment: Cumulative Effects to Groundwater, Alternative B. The first paragraph states, "The drawdown analysis indicates that for this scenario cumulative drawdown may extend up to 3.6 miles from the project area after 20 years". Given the Theis analysis conducted, as described in the Hydrology Technical Report, we suggest the following modification: "A hypothetical drawdown analysis indicates that for this scenario cumulative drawdown could extend 3.6 miles from the project area after 20 years. However, evaluation of actual drawdown information from adjoining areas of CBNG production indicates that geologic factors such as structures and continuity of beds could limit the extent of drawdown." (16)

Response: Sections 4.2.4 and 4.3.4 of the EA have been modified to clarify this issue.

141.Comment: The first paragraph also discusses the Kinnison domestic well. The EA states, "There is no lithology information for the Kinnison well, and so it may be finished in the Wall coal, and could be affected by CBNG development...". The EA should not lead (under either alternative) the reader to a premise for which there is no supporting information. If there is insufficient information for some wells, then state so, and indicate that the potential for effects to this well are unknown (see our related comment above on Table 2.5-1). (16)

Response: As there is no lithology information for this well the unit that it is finished in can not be confirmed. The depth of the well and the elevation of the ground surface provide the supporting information to support the premise that "it may be finished in the Wall coal, and could be affected by CBNG development". There is sufficient information to support the use of the words "may", and "could"; these conditional statements indicate the speculative nature of these conclusions.

142.Comment: Cumulative Effects to Groundwater, Alternative C. The first paragraph states, "The drawdown analysis indicates that for this scenario cumulative drawdown may extend up to 4.7 miles from the project area after 20 years". Given the Theis analysis conducted, as described in the Hydrology Technical Report, we suggest the following modification: "A hypothetical drawdown analysis indicates that for this scenario cumulative drawdown could extend 4.7 miles from the project area after 20 years. However, evaluation of actual drawdown information from adjoining areas of CBNG production indicates that geologic factors such as structures and continuity of beds could limit the extent of drawdown." (16)

Response: The effects of geologic factors on groundwater drawdown have been clarified in sections 4.2.4 and 4.3.4 of the EA.

143.Comment: Hydrology Technical Report, Page 9, as stated in the second paragraph, "As such the Northern Cheyenne numerical standards do not have Clean Water Act standing;" , therefore the proposed EC and SAR standards listed in Table 3 should not be included in any analysis for this permit application. If in the future, "Treatment as a state" is granted for water quality standards, the permit can be amended/modified to meet these proposed standards, if applicable at that time. (16)

Response: One of the NEPA criterion for significance is if "the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment" (40 CFR 1508.27-10). To evaluate this significance criterion, it is necessary to evaluate the resulting impacts against the Northern Cheyenne numerical standards, which represent a "local law...imposed for the protection of the environment" on the Reservation. While exceedence of such standards would not be illegal since these standards do not have standing under the Clean Water Act, their potential exceedence within the Reservation, without additional mitigation requirements, could affect the "significance determination" for the preferred alternative and whether a FONSI (Finding of No Significant Impact) could be signed.

144.Comment: Hydrology Technical Report, Page 22, under Cumulative Groundwater Impacts, it states that, "...it is assumed that the rate of groundwater discharge would be reduced by 20% per year." Based on actual experience with production from other coals at similar depths in this region, the rate of decline in water production would more likely be 50% the first year and 40% the following year. (16)

Response: A rate of reduction of 20% per year is consistent with the assumptions of the MT EIS, and consistent with the reduction in rates seen in other fields in this area. This 20% per year value is that submitted by PRG in their POD application. As discussed in Appendix C of the Hydrology Technical Report the change in pumping rate that would be predicted via a Theis analysis shows that actual pumping rates may fall off faster than predicted, however they would be anticipated to level off sooner. The result of this would be that production rates may be slightly overestimated over the short term, and somewhat underestimated over the long term. Since the maximum rate is consistent, and water management infrastructure and permits must be able to deal with this maximum rate, this potential difference is not considered to be critical. Actual production rates will determine the actual impacts, and if additional water management infrastructure or permits are needed to manage the produced water additional analysis will be conducted at that time.

145.Comment: Appendix C Drawdown Calculation Narrative. This document states (page 1) that the Theis analysis was used to estimate the extent of drawdown from the proposed action and alternatives. It further states that this is an appropriate analysis for this project given the uncertainty associated with the variable nature of the hydrologic properties of the coal seams. The Theis analysis, by itself, is a simplistic solution for estimating of drawdown from a pumping well. It does not, nor is it intended, to incorporate the effects of varying hydrogeologic conditions or uncertainties. (16)

Response: It is for this reason that the EA analysis and Hydrology Technical Report discuss the assumptions needed for using the Theis analysis. These sections have been modified to clarify this issue. The point is not that the Theis analysis is appropriate since the hydrogeology is variable, but rather that given the variable nature of the hydrogeology the results of a more complex model would be just as suspect, and so the additional effort would not be productive.

146.Comment: Appendix C Drawdown Calculation Narrative. Depressurization (drawdown) in coal beds observed as a result of pumping CBNG wells in Montana indicate that drawdown is sometimes not as extensive as predicted by classic hydrogeologic models. Drawdown may be limited by geologic structures such as faults, and variations in thickness and continuity of individual coal beds (Fidelity, 2004). Concomitantly, the time-rate of drawdown may be greater than predicted within these geologic features. (16)

Response: That is correct. For this reason the results of current monitoring have been incorporated into the EA.

147.Comment: Appendix C Drawdown Calculation Narrative. An overly conservative assumption is applied in Appendix C. The Theis calculations were performed on the premise of an equivalent single pumping center, representing all proposed wells within the POD, located at the project center. The estimate of drawdown by the Theis analysis extends from the exterior boundary of the POD area rather than the central location of the hypothetical production well. Applying the drawdown from the exterior boundary is not consistent with the scientific theory behind the Theis analysis. The extent of drawdown should be mapped from the equivalent pumping well center, and the presentation and interpretation of the calculated drawdown should be modified by the known hydrogeologic factors discussed above. In areas where the actual hydrogeological conditions are believed to deviate significantly from model assumptions, the map could be coded to indicate zones of potentially lesser or greater drawdown than estimated. The accompanying text should explain the basis for the modifications. If the BLM applies an additional buffer zone beyond the zone of drawdown calculated, it should be labeled as such. (16)

Response: Appendix C of the Hydrology technical report has been modified to clarify this issue.

148.Comment: Appendix C Drawdown Calculation Narrative. Page 2 of Appendix C states that the estimated drawdown and related figures, and drawdown map in this section illustrates the maximum radius of drawdown calculated under each scenario. This analysis uses a hydraulic conductivity at/near the upper limit of observed data, resulting in unrealistic estimates of drawdown. We do not believe this approach is consistent with the intent of the EA and the hydrogeology of the coal beds. Although, the hydraulic conductivity in the coal beds may be as high as 13 ft/day, as shown on Tables 2 and 3; the single best representation of the bulk hydraulic conductivity for the aquifer would be the geometric mean of 1.1 ft/day. The EA states that the compilation of 370 aquifer tests by Wheaton and Metesh (2002) provided the basis for calculating the geometric mean value and the standard deviation of hydraulic conductivity, as shown in Tables 2 and 3. Estimates of drawdown based on the geometric mean of hydraulic conductivity are most appropriate for this analysis. (16)

Response: It is agreed that the geometric mean hydrologic conductivity is most representative of the actual aquifer conditions. As such, the analysis in Appendix C of the Hydrology Technical Report includes the results for the 9×10^{-2} and 13 ft/day values, however in the body of the Hydrology Technical Report, in the EA, in the Figures, and in the assessment of wells and springs potentially affected by drawdown the results of the analysis using 1.1 ft/day are used.

149.Comment: Appendix C Drawdown Calculation Narrative. Tables 2 and 3 contain summaries of the estimated distance to the 20-foot drawdown contour from the PRG project for Alternatives B and C, respectively, for several hydraulic conductivities. The estimated drawdown distances given for the maximum hydraulic conductivity of 13 ft/day at 1, 5, 10 and 20 years in Table 2, and those for the maximum hydraulic conductivity of 13 ft/day column at 5, 10 and 20 years in Table 3, particularly for the Wall coal, appear inconsistent with that expected from a Theis analysis. The distance to the 20-ft drawdown contour apparently decreases as the hydraulic conductivity is increased to 13 ft/day (at a specific time). The distance to the 20-ft drawdown contour apparently decreases as duration of pumping increases (at $K=13$ ft/day). Although the average pumping rate for individual wells declines, the drawdown from later periods (10 and 20 years) should continue to increase, as the more recent drawdown is superimposed on the earlier drawdown. The calculations for drawdown distances presented in Tables 2 and 3 should be checked. (16)

Response: This result is due to the changing shape of the drawdown cone, and the fact that we are looking at the 20' drawdown contour. While the radius of lower values of drawdown would be expected to be greater for higher K values the radius of the 20' contour is highly dependent on the shape of the drawdown (dh/r) curve. Higher values of K result in more concave curves, and as a result the 20' contour for higher K values may be less than the same contour for low values. This is shown graphically in Appendix C of the Hydrology Technical Report.

150.Comment: The total amount of water that will be withdrawn for the alternatives is confusing and may be contradictory. The below bullets provide pumping rate estimates from the EA and related documents. It appears that the flow rate for the proposed exploratory project is 1.00 cfs for Alternative C and 0.56 cfs for Alternative B. For the potential production project, the flow rate is 2.5 cfs for Alternative C and 1.39 cfs for Alternative B. If these flow rates are correct, then the rates on page 39 of the EA and page 5 of the Hydrology Technical Report may need to be changed or explained.

Page 39: Permit MT0030660 for this project provides for 1,600 gpm (3.56 cfs) withdrawal.

Page 2 of the MT0030660 permit (included as an appendix of the EA): For the proposed exploratory project, the statement of basis provides for a withdrawal rate of 25 gpm per well for a total of 18 wells. This is a total of 450 gpm (1.00 cfs). For the potential production project, the total amount increases to 2.56 cfs for all 46 wells.

Hydrology Technical Report, page 12-13: Alternative C of the proposed exploratory project is listed as 1.00 cfs, which concurs with the MT0030660 Permit Statement of Basis. Alternative B is assumed to be 0.56 cfs. The flow rate for Alternative C is consistent with that in the MT0030660 permit statement of basis.

Hydrology Technical Report, page 20: The potential production project will use 1.39 cfs for Alternative B and 2.5 cfs for Alternative C. The flow rate for Alternative C is consistent with that in the MT0030660 Permit Statement of Basis.

Hydrology Technical Report, page 5: The ion exchange treatment process is assumed to produce a waste stream of 1% of the volume of untreated water processed. The waste volume per day is estimated at 60 barrels, or 0.029 cfs. Assuming the waste stream is 1% of the total untreated volume, the untreated volume is 2.92 cfs. (18)

Response: The rate of discharge for the surface water analysis of direct impacts under the No Federal Action alternative (Alternative B) should be 250 gpm (10 wells at 25gpm each; 0.56 cfs). The rate of discharge for analysis of direct impacts under the Proposed Action alternative (Alternative C) should be 450 gpm (18 wells at 25gpm each; 1.0 cfs). The rate of discharge for analysis of cumulative impacts under the Alternative B should be 623 gpm ($10/18 \times 2.5 = 1.39 \text{ cfs} = 623 \text{ gpm}$). The rate of discharge for analysis of cumulative impacts under Alternative C should be 1,120 gpm (the full 2.5 cfs allowable under the MPDES permit).

The maximum volume of water that could be discharged under draft Permit MT0030660 would be 1,120 gpm (2.5 cfs) (See Permit in Appendix B of the Hydrology Technical Report). The 1,600 gpm listed on Table 3.4.1-1 of the draft EA was an editorial error. 1,600 gpm is the maximum rate allowed by the existing Fidelity discharge permit.

The 2.56 cfs under the groundwater section is an estimate of the maximum rate that would occur if all 46 wells came on line at the same time. This is not anticipated to be the case since some of the wells would be drilled under this project, and the other cumulative wells would need to be drilled at a later date; however it provides a reasonable analysis for groundwater impacts. For surface water impacts, it is reasonable to use the 2.5 cfs maximum allowable discharge under the MPDES permit. If additional water management infrastructure or permits are needed in the future as a result of greater than anticipated water production rates, a separate environmental analysis will be required at that time. The project description has also been modified to indicate that under the No Federal Action Alternative approximately 86 barrels of brine would be produced per day ($250 \text{ gpm} \times 1440 \text{ min/day} = 3.6 \times 10^5 \text{ gpd}$; $3.6 \times 10^5 \text{ gpd} / 42 \text{ gal/barrel} = 8,571 \text{ bpd}$; $8,571 \text{ bpd} \times 1\% = 86 \text{ bpd}$), and under the Alternative C approximately 154 barrels of brine would be produced per day (same as above except 450 gpm rather than 250 gpm).

151.Comment: Page 14: "Testing would not last longer than 6 weeks and not exceed 30,000 cubic feet per day per well." This is unclear. The 30,000 cu-ft/day/well may be interpreted as a pumping rate of water, although later on page 48 it is explicitly stated as a methane gas production rate. (18)

Response: The description of alternatives in the EA has been revised to clarify the testing procedures. The 30,000 cubic feet/day/well is referring to gas production.

152.Comment: Hydrology Technical Report, page 22: Regarding the potential production project, the well pumping rate is assumed to start at 25 gpm/well and then decrease exponentially to 0 gpm/well over 20 years of project operation. What is the basis for determining the initial pumping rate and the decay function? The FEIS on page 4-8, for example, provides an equation that relates pumping rate with time. The initial pumping rate using this equation is 15 gpm/well and decays to 2.5 gpm/well in 20 years. FEIS page 4-10 also provides that the assumed well life of 20 years is partially an economic life issue of CBNG production in addition to an averaged well lifespan. What is the sensitivity of the presumed affected drawdown area with regards to pumping rate and project life assumptions? (18)

Response: As is stated in the Hydrology Technical Report "it is assumed that the rate of groundwater discharge would be reduced by 20% per year." Using these assumptions, the pumping rate per well would be 0.2 gpm, not 0 gpm after 20 years. This decay function is consistent with that observed in other coal seams developed for CBNG in Montana. The 25 gpm rate is that estimated by the operator, and is consistent with the calculated by the Theis equation to drawdown static water levels to near the top of the Wall coal. Little data is available for the Flowers-Goodale coal in this area; however, it is both thinner and would be anticipated to have a static water level further above its top than the Wall coal, therefore, water production rates could be greater, or less than, those for the Wall. As such, the 25 gpm initial rate provides an appropriate estimate for analysis. If water production rates are greater than anticipated, and additional water management infrastructure or permits are needed in the future, they will be analyzed at that time.

In the MT FEIS the initial pumping rate was estimated to be approximately 14.6 gpm with exponential decay following the equation $Q=14.661e^{-0.0242t}$ (where Q = pumping rate and t = time in months). This does not assume that the rate would be 2.5 gpm after 20 years, but rather the rate after 20 years would be 0.04 gpm, with the average rate over the 20 years being 2.5 gpm. The higher pumping rate in this project proposal is due to the greater thickness of the Wall coal seam compared to coal seams that were being produced in Montana at the time of the EIS preparation (D1, D2, D3, Carney and Monarch). The decay function used in the EIS is equivalent to a 23% per year decline in pumping rate, which is consistent with the 20% estimated for this project. A longer well life would cause the radius of the drawdown cone to extend further from the developed area, however, at the same time the decreasing pumping rates would allow for greater recovery outside of the produced field. As such, depending on the aquifer properties, a longer duration of pumping may cause the radius of drawdown to increase with time, or the lower pumping rates needed after an extended period of time would allow the radius of drawdown to decrease. Drawdown radiuses for different time periods are provided in Appendix C of the Hydrology Technical Report.

153.Comment: Will the pumping for the proposed exploratory and potential production projects always be at the maximum possible pumping rate? Wheaton, page 30, for example provides a ramped pumping rate in groundwater modeling which is carried into the FEIS. (18)

Response: The ramped rate presented by Wheaton and Metesh (2002) is consistent with the analysis in the EA. For this analysis it is assumed that the water production will drop by 20% per year. The Hydrology Technical Report discusses this in the section regarding cumulative groundwater impacts.

154.Comment: While Wheaton on page 18 provides a mean storativity of 9×10^{-4} for coal formations, the MODFLOW groundwater model parameters on page 25 use 6×10^{-5} for coal layers. Calculations performed by NRCE show that the lower storativity could increase the 20 feet drawdown contour to a distance of 2 miles from the CBNG wells for the proposed exploratory project. The drawdown analysis in

the EA should use the same storativities as those in Wheaton's groundwater model referenced in the FEIS. (18)

Response: The values in Table 2 on page 25 of Wheaton and Metesh (2002) were derived from aquifer tests conducted along the East Fork of Hanging Woman Creek. The values in Table 1 on page 8 were derived from aquifer tests throughout the Powder River Basin in Montana. As the location of this project is not along the East Fork of Hanging Woman Creek, it is more appropriate to use the basin wide values.

155.Comment: Hydrology Technical Report, page 23-24: The maximum drawdown radius generally is small for low values of hydraulic conductivity and then increases with conductivity. However, at high values of conductivity the drawdown radius has decreased. Please explain why the drawdown radius would not be expected to always increase with increasing hydraulic conductivity. Is this an issue with the amount of drawdown occurring at the point of pumping? The geometric mean of hydraulic conductivity does not always produce the largest drawdown area. A series of hydraulic conductivities ranging from the low to high estimates should be run to find the largest drawdown area. (18)

Response: For a given pumping rate over a given period of time the shape of the drawdown cone (i.e. how convex the curve of dh/dl is) is determined by the aquifer characteristics. For a given pumping rate in a confined aquifer, the area above such a curve is the same, however, the shape of the curve is different. For low values of hydrologic conductivity, the curve is relatively straight and near vertical, with a high magnitude of drawdown near the well, but the distance that a low magnitude of drawdown extends being limited. For high values of hydrologic conductivity the opposite is the case. The drawdown near the well is of a lower magnitude; however, distance of low magnitude drawdown extends further from the well.

For an example, assume that a well has been pumped at 25 gpm for six weeks and the aquifer has a storativity of 9×10^{-4} and a thickness of 55 feet. If the hydrologic conductivity were 9.8×10^{-2} ft/day, then the drawdown 1 foot from the well would be 8,470 feet (assuming such a thing were possible while maintaining confined conditions), while the 5 foot drawdown would occur 773 feet from the well. Meanwhile if the hydrologic conductivity were 13 ft/day, the drawdown 1 foot from the well would be approximately 87 feet, while the 5 foot drawdown would occur 5,310 feet from the well.

This can also be shown for different pumping times and different average pumping rates. This is shown in Appendix C of the Hydrology Technical Report on the charts of the drawdown cones, where for different drawdown values at a given time the radius of that drawdown may be more or less than the previous time period. For example, looking at the Wall chart, the 5' drawdown radius is the greatest for the 20 year time period, and less for each shorter time step; however the 200' drawdown radius is the least for the 20 year time period and becomes greater for the 1 year, 10 year, and 5 year time periods, in that order.

We agree that the geometric mean hydrologic conductivity would not be expected to produce the greatest drawdown. This is the reason why a series of drawdowns were calculated using the geometric mean, the geometric mean plus 1 standard deviation, and the geometric mean minus 1 standard deviation. The results of these analyses are contained in the Hydrology Technical Report. The maximum calculated drawdown radius was used in the EA.

156.Comment: In addition to the 20 feet drawdown contour reported in the EA, the 10 and 5 feet contours should also be stated. This would be helpful as 1) some features such as springs could be impacted from a smaller drawdown amount, and 2) it would allow comparison to similar drawdown contours provided in the FEIS, Wheaton, and other sources. (18)

Response: As discussed in the MT FEIS (page 4-62), it was determined that the 20 foot drawdown contour is the appropriate criteria for depicting impacts to groundwater resources from CBNG development.

157.Comment: Hydrology Technical Report, page 25: Why is it assumed that the coal aquifers are completely confined in the drawdown analysis? Wheaton (page 44), using low interburden hydraulic conductivity

values, found that non-coal members (overburden and interburden) were still affected by pumping from lower coal seams. Recovery time for the overburden layer was generally longer than that for pumped coal seams. The general modeling finding was that springs and wells in the vicinity of pumping would be diminished or eliminated. Proposing to mitigate only those wells finished in the coal formation itself may neglect that wells at other elevations could be affected and does nothing to mitigate impacts on surface springs. (18)

Response: The water mitigation agreements provided for by the designation of the Powder River Basin controlled groundwater area are not limited to those wells and springs which emit from the coal seams, but rather apply to all wells and springs. Thus, if impacts did occur to these resources they would be covered by these agreements. No one is proposing to mitigate only those wells finished in the coal formation itself. The EA has been modified to clarify this issue.

The assumption that the coal aquifers are confined is based upon the known geology of the area, where coal seams are typically bounded by shale units. Wheaton and Metesh (2002) state that “No data were available for horizontal anisotropy nor for vertical hydraulic conductivity for any of the hydrostratigraphic units. Horizontal hydraulic conductivity was assumed to be isotropic ($K_x = K_y$) for the model. The lithology of the overburden and interburden layers suggest a much lower vertical hydraulic conductivity (K_v) and were assumed to be 1% of the value used for the horizontal hydraulic conductivity.” Information contained within the Year One Groundwater Monitoring Report for CBNG (Wheaton and Donato, 2004) show that “Mining at the West Decker mine has not lowered the water levels in the Squirrel Creek alluvium, which indicates a lack of vertical communication between the coal and shallow aquifers (Van Voast and Reiten, 1988). For the same reason, CBM production has not lowered water levels in the alluvium.” and that “Water levels in Anderson overburden in the Squirrel Creek area (Figure 12) show possible correlation with precipitation patterns (Figure 12-A), and no drawdown due to CBM production. The lack of drawdown in overburden sandstone indicates the slowness of vertical responses.” Thus, the analysis of these units as confined is consistent with the available information, since K_v has not been defined, but it is known to be quite small. It should be noted that when K_v is small the time needed to define it is long. Although monitoring of coal overburden adjacent to coal mines has been ongoing for over 30 years, no response to overburden water levels due to the dewatering of the coal in the mine has yet been observed. Thus, quantification of K_v is not possible at this time, although it is known to be a low value.

158.Comment: The drawdown calculations were made using Theis equation with a confined aquifer, while estimates regarding aquifer recovery were taken from an unconfined MODFLOW model (Wheaton et al, 2002) of the Hanging Woman Creek region. There should be a consistent approach for evaluating periods of pumping versus recovery. Assumptions in the MODFLOW model of boundary conditions, locations of faults, pumping rates, locations, well densities, and pumping patterns are different from those in the Hydrology Technical Report. (18)

Response: In order to address this issue a 2D (confined) MODFLOW model was prepared for the Wall coal seam under the proposed action alternative. After the Wall coal seam had been pumped down to near the top of the coal seam for 180 days using 9 wells (simulated as constant head cells set 5' above the top of the coal seam) the model was then allowed to recover. This modeling indicated that it would require 160 days for the groundwater levels to recover to within 20' of initial static water levels within the development field.

159.Comment: Have any faults been identified in the project area which could affect the propagation of the cone of depression? Including a geologic map of the area with cross sections would be helpful. (18)

Response: The “Geologic Map of the Birney 30'x 60' Quadrangle, Eastern Montana” (Vuke, Heffern, Bergantino, and Colton, 2001) shows no faults in the vicinity of the proposed project; however it is known that faulting is common in this area (Wheaton and Metesh, 2002). The geologic map in the Hydrology Technical Report has been expanded to clarify this issue.

160.Comment: the Tribe is concerned that the treatment method is intended only to remove cations from the produced water. Discharge of elevated concentrations of anions, such as ammonia, may cause water quality impairment and should be evaluated in the EA. (18)

Response: An analysis of all parameters for which narrative or numeric standards have been developed is included in Appendix B of the Hydrology Technical Report in the MDEQ's Statement of Basis. EC and SAR were analyzed in detail in the EA since they should be indicative of impacts which may result from CBNG, including salinity and suitability for irrigation. Also, as discussed in the EA, "Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR) are the parameters most likely to be affected by CBNG development (MDEQ, 2003), therefore, the discussion in this document will focus on these parameters." The EA has been modified to clarify this issue (see EA Section 3.4.1).

161.Comment: The EA should include a risk assessment evaluating the probability and likely consequences of a failure of the treatment system. A water quality scenario should be modeled which assumes that the ion exchange process has failed and the untreated water is released into the Tongue River for a 72 hour period at low flow. (18)

Response: The EA focuses its analysis on reasonably foreseeable impacts, not worse case scenarios such as the failure of the treatment system for three days at low flow. The proposed treatment plant would be outfitted with telemetry devices to alert the operator if the treatment plant were not working properly. Additionally, the pond associated with the treatment plant is specifically for storing water in case of equipment malfunction or maintenance activities. Also, if the treatment plant could not be fixed in time to prevent the pits from overflowing, the pumps in the wells could simply be shut off, thereby preventing untreated discharge from occurring. As such, there is considered to be a low risk of failure of the treatment system to such an extent that untreated water would be discharged. Therefore, this scenario is not considered to be reasonably foreseeable, and it would not be appropriate to include it in the NEPA analysis.

162.Comment: Is the spreadsheet model the same as that used in the FEIS, as described in the Surface Water Quality Analysis Technical Report (BLM et al, January 2003)? If so, provide this reference in section 1.2.1 (page 7) of the EA or another location. (18)

Response: No, the spreadsheet model used in this analysis is not the same one used in the MT FEIS. This model is based on many of the principals of the MT FEIS model, however, it has been modified to include the effects of the Tongue River Reservoir, and to calculate SAR from the resultant concentrations of Na, Ca, and Mg, rather than calculating SAR (which is a ratio) through mixing. Additionally, this model includes calculations of resultant surface water quality at the USGS station below the Dam, which was not included in the MT FEIS model.

163.Comment: Hydrology Technical Report Appendix A, page 2, paragraph 2, line 2: The statement "Effects of the reservoir were modeled as simple mixing, where inflows are mixed such that the outflow is less extreme than either end member." is misleading. Inflows with high constituents entering a reservoir with low constituents will, with simple steady-state mixing, produce outflow with lower constituents than the inflow. Conversely, inflow with lower constituents entering a reservoir with higher constituents will result in an outflow with higher constituents. Also, it is uncertain what the term "end member" refers to. (18)

Response: This section of Appendix A of the Hydrology Technical Report has been modified to clarify this issue. The statement was intended to indicate that the outflows would be an average of the inflows over a period of time, therefore the outflow chemistry is less variable than the inflow chemistry (i.e. the outflow is less extreme than either the most dilute or most saline end members).

164.Comment: Please provide descriptions or tables providing the following: 1) the assumptions, initial conditions, calibration parameters, and calibration targets of the model; 2) for each scenario modeled, provide all inflow sources used and associated SAR and EC values. Currently, little information is given

regarding how the model was calibrated and the inflow components of each scenario are difficult to determine from the text. (18)

Response: Appendix A of the Hydrology Technical Report has been modified to clarify this issue. The assumptions, initial conditions and calibration procedures for this model are discussed in Appendix A. It should be noted that the calibration process takes the results from the pre-CBNG model and adjusts them to match historical values. As such, calibration targets are not applicable. Plots of the uncorrected model data have been added to Appendix A to provide additional information on this approach.

165.Comment: Hydrology Technical Report, page 21: The base scenario is actually a model run wherein the historically low constituent amounts are increased due to an existing untreated CBNG release (under permit MT0030457 issued to Fidelity Exploration and Production Company) which, from Appendix A page 4, is 1,600 gpm with EC=1,987 AS/cm and SAR=46.2. Inclusion of the above discharge in the base scenario produces a significantly worse quality water than that observed historically. Data from the USGS station 06307500 at Tongue Dam (http://waterdata.usgs.gov/nwis/uv?format=gif&period=31&site_no=06307500) does not show this increase in SAR. While including CBNG releases from other sources is necessary, it should not be done in the base scenario. The Fidelity release should be added to Alternatives A, B, and C. Use of the historic water quality data as the base scenario is consistent with the FEIS (page 5-44, comment C-34). (18)

Response: The Fidelity discharge is a part of the existing environment and, as such, it is addressed in the Affected Environment section of the EA. The historical water quality data is also included in the Affected Environment section for comparison. The Affected Environment section has been modified to indicate that noticeable increases in EC and SAR have not been noted in monitoring data since the start of CBNG production once values are corrected for flow.

166.Comment: The historic flow rates, SAR, and EC cited in the Hydrology Technical Report page 9 is slightly different from that cited in the FEIS, page 3-26. Are you using a different period of record? (18)

Response: Yes, the flow rates are somewhat different due to new flow and water quality data being added to the data base since the MT EIS, and due to the USGS calculating updated 7Q10 values.

167.Comment: The results of modeling "Cumulative" scenarios provided throughout chapter 4 of the EA are higher than those reported in the Hydrology Technical Report, page 21. These don't appear to be the same results. (18)

Response: You are correct. This was an editorial error which has been corrected.

168.Comment: The "Cumulative" scenarios include a proposed CBNG discharge from pending permit MT0030724 (Fidelity Exploration and Production Company). There are conflicting data in the Hydrology Technical Report on the expected constituent levels from this discharge. It appears that since the potential production project under Alternative B and C in the Hydrology Technical Report (but not the EA) produces equal or better quality water than base conditions, that the fully treated water is being assumed. (18)

Response: This permit was originally submitted as full treatment, however, it was then modified to treat to the MDEQ's EC and SAR standards. As such there were some editorial changes that did not get made. These have been corrected.

169.Comment: Unless a discrepancy was made with regards to expected constituents in the discharge, it may not be appropriate to include the proposed Fidelity project (pending permit MT0030724) in the water

quality analysis. Including this project seems to lead to the modeling result that full development of the potential CBNG production project (Alternative C) will lead to equivalent or even cleaner water than the base scenario, which is counter-intuitive especially since the proposed discharge from this project will be mixed with untreated waters for a SAR of less than 3. Also note that from Appendix D, page 4, in addition to being a proposed project, the Fidelity project may opt to store pumped waters on site with disposal through local irrigation rather than discharging to the Tongue River. The water quality analysis should not rely on a proposed project to provide for improved waters. (18)

Response: This action is reasonably foreseeable since the permit has been applied for. As such was analyzed in the cumulative analysis.

170.Comment: What are the environmental impacts of using ion exchange treatment technology (which uses and requires on-site storage of acidic and caustic materials) versus other treatment technologies such as reverse osmosis. (18)

Response: Other treatment technologies were not proposed. Because one of the purposes of the proposed action is to demonstrate the feasibility of the Higgins Loop treatment system, an analysis of other treatment technologies is outside the scope of EA.

171.Comment: How frequently will treated water discharged into the Tongue River be sampled for constituent levels? This is with regards to the sampling of the blended treated and untreated waters prior to discharging into the Tongue River. Assuming that the water entering the Tongue River was violating or contributing to a violation of maximum constituent levels, how long would elapse before the situation was discovered through sampling and well pumping was discontinued? Will there be any automatic monitoring and shutdown capabilities, perhaps using a SCADA system? (18)

Response: Sample frequency and type are specified in Table 1 of the MPDES discharge permit for the proposed project (MT0030660). The frequency ranges from instantaneous (continuous) for flow to daily, weekly or monthly for chemical constituents. Sample types are specified as either grab or 24-hour composite. Routine analytical results must be reported to the Department on Discharge Monitoring Report (DMR) forms on a monthly basis. The permit requires that the permittee report any serious incident of noncompliance as soon as possible but no later than 24 hours after the time the permittee first becomes aware of the circumstances (Part II.I). Any violation of the permit limits is subject to this condition. A written explanation of the noncompliance is required within 5 days of discovery of the violation. The elapse time after a violation occurs and a Department action depends on the seriousness of the violation, past violations and other factors beyond the scope of this analysis. Under the Montana Water Quality Act, the Department has a wide range of enforcement options including revoking the discharge permit should sufficient cause exist.

172.Comment: Are there any long term concerns of biological contamination of the ion exchange resin which might contribute to water quality? (18)

Response: The quality of the water being discharged would be monitored in real time, and samples would be taken as provided for in the MPDES permit for laboratory analysis. If long term effects to the resin occur for any reason, it is the responsibility of the operator to maintain the treatment system such that the requirements of the MPDES permit are met for all discharged water.

173.Comment: EA page 14, paragraph 5, and EA page 16, paragraph 1, Analysis does not indicate what the actual chemical composition of the discharge water will be prior to discharge into the Tongue River. Has this type of water treatment been shown to be environmentally compatible with this area. It seems that there may be additional chemical constituents to the water that may have an effect on the chemistry of the Tongue River after the point of discharge. (18)

Response: The anticipated chemistry of the treated water is included in the MDEQ's Statement of Basis (SOB) which is included in Appendix B of the Hydrology Technical Report. The SOB also addresses what the parameters of concern are for this discharge in this area.

174.Comment: EA page 14, 15, 57. The EA should identify specific beneficial uses for treated discharge water. PRG has proposed a "variety of potential beneficial uses for treated water" including "wildlife, livestock, irrigation, and industrial uses." The Montana Water Use Act requires persons seeking to put water to a beneficial use to obtain a permit from the Department of Natural Resources and Conservation (DNRC). The EA contains no description of the proposed beneficial uses and no evaluation of the potential environmental impacts of such uses. Yet the EA concludes, without any supporting scientific data or analysis, that "the treated water would be suitable for all the proposed beneficial uses." (13, 14, 18)

Response: The EA has been modified to address this issue. Beneficial use of produced water, either by the operator or the landowner, will require water rights permits from the Montana DNRC.

175.Comment: EA page 40, paragraph 1, The EPA has been reviewing and working with the Tribe since 2001 in developing water quality standards for all Tribal waters within the Reservation. The Northern Cheyenne Water Quality Standards are currently a matter of Tribal law approved by the Northern Cheyenne Tribal Council to provide protection of Tribal waters. The Northern Cheyenne Water Quality Standards were not only developed to protect agricultural uses within the Tongue River watershed, but also to protect native plant species that have cultural significance and are integral in ceremonial and traditional aspects of the Northern Cheyenne Tribe. Indeed, the numeric criteria for SAR and EC in the tribal standards are more stringent to protect these indigenous vegetative communities and Cheyenne culture. (18)

Response: Section 3.4.1 has been modified to include this information.

176.Comment: EA page 41, paragraph 4, This section describes post-treated discharge water as having a SAR < 3.0. This is greater than the numeric SAR value of 2.0, as dictated by Northern Cheyenne Water Quality Standards. How will it be ensured that an SAR value of 2.0 is not exceeded by the discharge water, following EPA's approval of Northern Cheyenne's TAS? (18)

Response: If the Northern Cheyenne Tribe is granted TAS, and the Northern Cheyenne SAR standard is approved by the EPA, then the standard will have standing under the Clean Water Act and will be enforceable upstream. Should that occur, the MDEQ will need to re-evaluate all of its existing permits to ensure that they will not cause the applicable standards to be exceeded, and to reopen and modify the permits as needed. This MPDES permit contains a reopener provision which allows for modification of the permit if, "The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit." The analysis in this EA indicates that the discharge of the treated CBNG water will not cause SAR values in the Tongue River to exceed the Northern Cheyenne standard of 2.0 at the southern Reservation boundary; however this is an impact analysis, not a regulatory determination.

177.Comment: The EA makes the unsupported conclusion that EC and SAR are the parameters most likely to be affected by CBM development, and that therefore the discussion in this document will focus on these parameters." EA-39. The EA contains no scientific data or analysis to support this conclusion and ignores evidence to the contrary in the DEQ draft MPDES permit and statement of basis-which acknowledges that numerous Parameters of Concern, in addition to EC and SAR, have the reasonable potential to cause or contribute to a violation of water quality standards or exceedances of non-degradation thresholds. Fidelity's existing discharges into the Tongue River are limited by the ammonia non-degradation threshold, not EC and SAR. The MDEQ denied Fidelity's application for an MPDES permit to discharge methane wastewater into Squirrel Creek, a tributary of the Tongue River, because of exceedances of the fluoride non-degradation threshold. The MDFWP, EPA, and MDEQ identified bicarbonate as a pollutant of concern to aquatic life more than two years ago. The WDEQ has identified bicarbonate as a pollutant of concern as a result of several WET

test failures in Wyoming. Fidelity's discharges recently failed a WET test, indicating that methane wastewater may be harmful to aquatic life. See Exhibit I. The WDEQ has also identified barium as a pollutant of concern and completed a non-degradation analysis. (13)

Response: This conclusion is supported by the MT EIS, and in the MDEQ ROD for that EIS. The analysis of all parameters for which standards exist is included in the MDEQ's SOB, which is in Appendix B of the Hydrology Technical Report for this project. Through this analysis all parameters of concern are addressed, and the MPDES permit is written to ensure that none of the standards (numeric, narrative, or non-degradation) are exceeded. These standards have been developed to ensure that all beneficial uses, including aquatic life, are protected.

178.Comment: The EA contains no surface water quality data for the Tongue River for any of these Parameters of Concern other than EC and SAR. Agencies admit that there is no adequate baseline surface water quality data for the section of the Tongue River that may be impacted by the Project. (13)

Response: It is recognized that monitoring will include additional parameters, therefore the MPDES permit requires this monitoring. Data on a wide variety of parameters, including all parameters of concern, is included in the MDEQ's SOB, which is included in Appendix B of the Hydrology Technical Report.

179.Comment: The inventory of existing and proposed discharges into the Tongue River watershed is grossly incomplete and ignores hundreds of impoundments constructed in the intermittent and ephemeral tributaries of the Tongue River in Montana and Wyoming. Many of these in-channel impoundments are designed to discharge methane wastewater into such tributaries during storm events. These impoundments can also fail and discharge wastewater into these tributaries and create saline seeps downstream. (13)

Response: A discussion of cumulative level of CBNG development is included in section 2.3 of the EA. A more detailed discussion of how these cumulative actions affect the hydrologic analysis is included in Appendix D of the Hydrology Technical Report.

180.Comment: The Project includes the construction and operation of a proposed "water storage pit". EA-13. In the 2003 FEIS, the BLM promised to evaluate the impacts of impoundments at the project level when site-specific data was available. The storage pit will be lined. What is the estimated infiltration rate from the impoundment into shallow aquifers? What are the likely impacts of such infiltration on the water quality of the shallow aquifers? What are likely infiltration rates for impoundment lined with 12 mil polyethylene liner? See Exhibit K for a list of other issues regarding the impoundment that the Agencies failed to consider. (13)

Response: The thickness of this liner has been revised to 20 mils. No infiltration would be anticipated to occur through this liner, as such an analysis of impacts of infiltration on shallow aquifers shows only minor potential for impacts. The MBOGC are responsible for the permitting of this impoundment. The BLM is responsible for the analyzing the likely environmental impacts and compliance with Onshore Order #7. This impoundment meets these requirements; see Appendix E of the Hydrological Technical Report.

181.Comment: The EA does not consider the impacts of drawdowns on levels in the Tongue River Reservoir. A recent study suggests that drawdowns in the vicinity of the reservoir may impact water levels. See Exhibit L. (13)

Response: As the coal seams in the project area are located well below the elevation of the bottom of the reservoir, and the intervening interburden material has a low vertical hydrologic conductivity, the development of these coal seams would not affect water levels in the reservoir. EA sections 4.2.4 and 4.3.4 have been modified to clarify this issue.

182.Comment: The EA fails to consider the impacts of methane wastewater discharges on the concentrations of other Parameters of Concern in the Tongue River. Nor does it evaluate the effectiveness of proposed treatment at removing other Parameters of Concern, including, but not limited to, ammonia, barium, bicarbonate, sodium, fluoride, selenium, and arsenic. (13)

Response: As is stated in section 3.4.1 of the EA, "Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR) are the parameters most likely to be affected by CBNG development (MDEQ, 2003), therefore, the discussion in this document will focus on these parameters". For this reason, the EA does not address the effectiveness of this treatment in removing other Parameters of Concern. The projected effluent water quality that will result from the treatment process is shown in the SOB in Appendix B of the Hydrology Technical Report.

183.Comment: The EA fails to evaluate the impacts of PRG's discharges on TSS levels in the Tongue River. CBM wells stimulation activities at Fidelity's CX Field have caused the company to violate the TSS effluent limitation of its MPDES on at least twelve occasions. Does PRG plan to stimulate its wells? The agencies need to evaluate the impacts of such stimulations on the water quality of PRG's discharges and the resulting impacts on the surface water quality of Tongue River. The agencies need to evaluate the impacts of increased concentrations of TSS in the Tongue River on aquatic life. (13)

Response: PRG may stimulate the proposed wells to finalize their completion. TSS levels should not be an issue due to the utilization of the treatment facility. All produced water would be transported from each well to a settling pond near the treatment facility. Solids would be allowed to settle before the water enters the treatment unit. Following the treatment process, the water would again enter the pond before it would be discharged into the river. Essentially, due to the treatment processes, TSS levels would not impact on the Tongue River or its aquatic life.

184.Comment: The EA concludes that agriculture has been determined to be the most sensitive beneficial use of the Tongue River. Like the 2003 FEIS, the EA includes no scientific data or rationale to support this conclusion and ignores recent WET testing results that refute this conclusion and show that methane wastewater may be toxic to aquatic life. CBM wastewater contains elevated levels of ammonia and bicarbonate that may impact aquatic life. The EA does not discuss the potential impacts of methane discharges on aquatic life. (13)

Response: Additional WET testing is a requirement of the MPDES permit for this project. The potential for all parameters for which surface water quality criteria have been developed is analyzed in the SOB contained in Appendix B of the Hydrology Technical Report.

185.Comment: The BLM needs to evaluate the site specific drawdown impacts including the influence of local fault lines. Monitoring data of drawdowns at the CX Field show that faults and other geologic features have a substantial impact on local drawdowns. The BLM needs to conduct the necessary baseline geologic information and then model the site-specific drawdowns. The EA does not include any scientific rationale explaining why the modeling in the Hanging Woman Basin can be extrapolated to this project area. (13)

Response: A model of drawdown was developed for this project and the results of the ongoing monitoring have been added to the EA. It is this monitoring, not modeling, that will allow the actual impacts from the project to be known.

Along with the discussion of the results of the Hanging Woman model, this EA also states that "The exact radius of the drawdown cone, and the time required for the head to recover, would depend on the site specific aquifer properties, the precise timing of the pumping of each of the wells, and the overall nature of CBNG development in this region." The coal seams analyzed in the Hanging Woman model and for this project are both contained within the Tongue River Member of the Fort Union Formation; however, they are not the same coal beds. This section of the EA has been modified to clarify the applicability of these results to the project area. An analysis of the drawdown and recovery of the Wall coal seam have also been conducted. This analysis shows drawdowns less than calculated in the EA, and shows that after 180 days of testing the Wall coal seam would be expected to have static water levels return to within 20' of pre-testing levels after 160 days.

186.Comment: The description of methane development in Wyoming is inadequate. EA-Cumulative Projects states that “it is not anticipated that CBNG development in Wyoming will combine with the proposed action to create impacts to surface waters.” The EA admits that existing CBM development in Wyoming has degraded the Tongue River at the state line (see table in EA). The WDEQ has not permitted any direct discharges to the Tongue River yet the water quality at the state line has been degraded. The only possible source of such degradation is discharges from impoundments in Wyoming. As shown in Exhibit P, discharges from a single impoundment can impact surface water quality. The agencies need to complete an inventory of all such wastewater impoundments and consider the cumulative impacts of such impoundments on surface water quality. Exhibit Q is a partial inventory of such impoundments from the WDEQ files. (13)

Response: The difference between Historical Conditions and Modeled Existing Conditions in Table 3.4.1-2 is due to the addition of the existing 1,600 gpm discharge in Montana, which has been permitted by the MDEQ; not due to Wyoming CBNG development. As monitoring data has not shown any change in the water quality in the Tongue River, an analysis of these impoundments would not be appropriate at this time.

187.Comment: The Agencies need to consider the cumulative impacts of in-channel impoundments in Wyoming and Montana on surface water flows and natural hydrologic regimes and adverse impacts on downstream water users. (13)

Response: The proposed action does not include any on-drainage impoundments. The use of historical surface water quality data in the EA captures the cumulative impact of on-channel impoundments upstream of the project area, and is appropriate for the surface water quality analysis.

188.Comment: The EA states that “actions are considered relevant if they have the potential to create effects overlapping in time and locale with the proposed action effects or alternatives, thus resulting in cumulative effects.” EA-16. The EA does not describe the existing drawdowns in coal seam aquifers caused by the Spring Creek Coal Mine, Decker Coal Mines, or existing methane development at the CX Field. This information is readily available. Where is a map or hydro-geologic analysis of the drawdown impacts caused by the Project? (13)

Response: The drawdown-related impacts from the Spring Creek and Decker Coal Mines, or the existing methane development in the CX field, do not overlap in locale with the PRG proposed action or the alternatives. These coal mines are in the Anderson-Dietz coal zones, and the CX field is developing the D1 (Anderson), D2, D3, Monarch and Carney coal zones. The wells for this project would be testing the Wall and Flowers-Goodale coal zones. As such, the drawdowns from these other projects do not have the potential to overlap with the PRG project and create environmental impacts.

189.Comment: We [EPA] concur with the current methodology that provides a modeled estimate of the expected mixing loads based on three defined Tongue River flow conditions: 1) high mean monthly flow, 2) low mean monthly flow, and 3) the 7Q10 flow which is the lowest flow over 7 consecutive days in a 10 year period. We recommend that the 7Q10 flow mixing load information also be added to Table 2.5-2 regarding the summary comparison of effects for each alternative. (20)

Response: Table 2.5-2 has been modified to include this information.

190.Comment: The potential water quality impacts of the proposed discharge upon the Tongue River should be expanded to address the potential effect of bicarbonate concentrations upon the aquatic organisms in the receiving stream. There is information showing the bicarbonate ion is toxic to fish. As a result, there is concern that there could be an adverse effect to aquatic organisms due to changes in the bicarbonate concentrations resulting from CBNG produced water discharges to the Tongue River. For this final EA, EPA suggests that the

concentrations of bicarbonate in the produced water, the effluent water following ion exchange treatment, and resulting instream concentration be added to aid in the understanding of this potential concern. We suggest adding bicarbonate concentrations into the model that has been used to tabulate the concentrations for the sodium adsorption ration (SAR) and salinity as measured by electrical conductivity (EC). Modeling results for bicarbonate concentrations could then be used to determine if the resulting instream concentrations warrant concern. (20)

Response: The MDEQ in its SOB addressed bicarbonate and determined that it did not have the potential to exceed the narrative standard. A brief analysis, which uses the water quality values from the PRG MPDES application (average discharged $\text{HCO}_3^- = 475 \text{ mg/l}$), and 7Q10 flow below the dam (70 cfs) indicates that the resulting instream bicarbonate concentration (251 mg/l) would only be 3.3% over background levels (243 mg/l) under these conditions. This increase does not exceed the non-degradation threshold of 15%, and it is well below the 530 mg/L threshold recommended by Horpstead et al (2001), which was based on the potential to cause impacts to aquatic life (Mount et al., 1997). A brief discussion on this point has been added to the Hydrology Technical Report. Since it is not anticipated that the proposed discharge would cause impacts, further analysis is not warranted.

191.Comment: EPA promulgated a final regulation (60 FR 53529, October 16, 1995) concerning the use of whole effluent toxicity (WET) test methods to protect aquatic life. The EPA-approved WET methods are specified at 40 CFR 136.3. WET testing is proposed as a component of the draft MPDES data gathering and compliance monitoring for the proposed Powder River Gas discharge into the Tongue River. These WET methods employ freshwater invertebrates to measure the acute or short-term chronic adverse effects of effluents and receiving waters monitored under NPDES permits. The WET test involves the use of aquatic organisms, typically a water flea of the species *Daphnia magna* or *Ceriodaphnia dubia*, to assess effluent and ambient water quality conditions. EPA suggests that BLM's final EA include the information available from Wyoming DEQ that one test of produced water from the Big George coal unit from Wyoming resulted in lack of survivability of water fleas using EPA's approved WET method protocol. EPA suggests the final EA should discuss the advantages of conducting WET testing. Montana DEQ has included both acute and chronic WET testing requirements in the draft MPDES permit. A final decision by MDEQ to require WET testing in the MPDES permit for Powder River Gas should be completed later this fall. (20)

Response: The EA has been modified to clarify that WET testing is a requirement of the MPDES permit. Discussion concerning the fact that CBNG produced water from the Big George coal seam has failed the WET test, and concerning the actions that would be taken if the WET test were failed, have also been added to the EA. An EA for a particular project is not the appropriate venue for detailed discussion of the technical merits for a particular testing procedure. Such a discussion may be better suited to professional literature.

192.Comment: According to the project map, there appears to be a surface spring located about 300 yards upstream of the proposed federal well number 11-6. The final EA should describe the existing flow conditions for this spring, its geologic and ecological setting and assess the risk, if any, of ground water drawdown that will result from the proposed action at full development to adversely affect the flow from this surface water source. (20)

Response: The EA and Hydrology Technical Report have been modified to include discussion of this spring.

Indian Trust & Native American Concerns

193.Comment: The April 2003 Record of Decision for the Final Environmental Impact Statement (FEIS) and Powder River Resource Management Plan (RMP) Amendment provides:

To protect Reservation groundwater the operator will be required to conduct geologic and hydrologic evaluations for CBM production wells to be located in areas that may have hydrologic connectivity with Reservation groundwater.

For CBM wells located in aquifers with hydrologic connectivity to Reservation groundwater, the operator will be required to conduct a geologic and hydrologic evaluation prior to field development that identifies the potential for CBM production to affect Reservation groundwater resources.

When the site-specific studies determine there will be an effect to Reservation groundwater, the operator must develop and apply measures to prevent the impact of groundwater withdrawal and monitor the effectiveness of such measures.

The proposed project is approximately 12.5 miles from the southern boundary of the Reservation, within the 14-mile drawdown radius predicted by two dimensional groundwater modeling and the 14-mile buffer area proposed by the Tribe in its August 2002 mitigation plan. No three-dimensional groundwater modeling has been conducted for the project area. Accordingly, the Tribe believes that site-specific studies are necessary prior to any CBNG production from the Coal Creek Project POD area. The EA should indicate whether BLM believes the aquifers subject to exploration to have "hydrologic connectivity" with the Reservation if so whether site-specific geologic and hydrologic evaluation will be required prior to field development. (18)

Response: The limited amount of groundwater pumping and methane extraction associated with the testing of these wells will not impact tribal resources. If PRG submits a POD for field development, a site-specific geologic and hydrologic evaluation will be conducted to determine whether production has the potential to affect Reservation resources.

194.Comment: On page 4-89 the FEIS states "Without site-specific information, it is impossible to predict the degree of drawdown to a neighboring aquifer. In the case of the Crow and Northern Cheyenne, it is conceivable that the reservations' groundwater would be drawn down to some extent along the boundaries by both state and BLM-leased development. The drawdown of groundwater within the reservation could result in impacts on shallow stock and domestic wells and some surface springs. These impacts would reduce water pressure and in some cases could render the complete loss of water from a well or spring."; while this is mentioned in conjunction with a non-preferred development alternative, it is still relevant in this case. The FEIS recommends that monitoring be undertaken to determine these site-specific data. Has site-specific hydraulic conductivity and storativity data for the specific coal formations in the project area been collected? (18)

Response: The groundwater pumping and testing to be conducted as part of PRG's exploration POD will generate information on the aquifer properties of the coal beds to be tested. Such information will be useful in evaluating potential drawdown if PRG, or any other company, ever submits a POD for commercial production from these coal beds. It should be noted that while the FEIS recommends that these aquifer characteristics be determined via testing, it also emphasizes the need for regional coal seam groundwater monitoring (in particular see the conclusions of the 3D Groundwater Report; Wheaton and Metesh, 2002). The BLM is funding MBMG to conduct this monitoring is being done throughout the Montana portion of the Powder River Basin. The monitoring report for the first year of this project is available at <http://www.mt.blm.gov/mcfo/cbng/CBNG-Monitoring.htm>.

195.Comment: If the coal layer is completely confined, where does the recovery water come from? If recharge to the pumped coal layer is from upper formations, than the operator should mitigate other well owners and spring impacts for additional years during the recovery period. Wheaton, page 45, for example noted that 70% recovery near the well field could take 10 to 15 years. If recharge occurs due to expansion of the cone of depression within the assumed confined coal layer, the operator should assist the Tribe in monitoring and mitigating drawdown that may occur in the coal layer outcroppings on or near the Reservation, as noted in FEIS page 5-57 comment number C-174, appendix MON page 17, and appendix CHE pages 17 to 18. FEIS page 3-64 noted that over 100 springs are located on the Reservation, with some of these springs originating from the coal outcrop. The outcrops also intersect the Tongue River at a location upstream of the Reservation boundary. The EA on page 48 seems to neglect the subsequent effects of recharge with "(Groundwater drawdown) Impacts would not be expected after the cessation of CBNG development since the aquifer would then be in the recovery phase, with groundwater levels rising in the area that had been drawdown by CBNG development." (18)

Response: The coal aquifers are modeled as confined aquifers for this analysis. This is due to their being bounded by non-porous shale. This does not preclude their receiving recharge at outcrop, where they would be unconfined. As discussed in Chapter 4 of the EA, the groundwater pumping and testing as part of PRG's exploration POD would not be expected to cause groundwater drawdown to extend onto either the Northern Cheyenne or Crow reservations. Recovery from this testing will take place relatively quickly (projected 160 days to recover to within 20' of pre-testing levels after 180 days of testing) with the recharge water provided by the adjacent aquifer, and from recharge at outcrop. The recovery of an aquifer from pumping is not due to the expansion of the drawdown cone, but rather due to the re-establishment of the equilibrium which existed prior to stressing (pumping) the system.

196.Comment: The EA provides little discussion on monitoring groundwater levels, both for the baseline condition and during any proposed CBNG development. The FEIS page 5-37 comment C-42 and also in appendix CHE page 4 provides that project plans should include monitoring wells installed and monitored by the operator or federal agencies. The FEIS appendix MON page 17 states that flow from springs near the well fields or of importance will be monitored on a monthly basis. There is also concern regarding groundwater or methane migration through the coal formations that underlay and form outcroppings on the Reservation. The FEIS appendix MON page 19 shows proposed monitoring areas of such outcroppings. (18)

Response: As discussed in Chapter 4 of this EA, the groundwater pumping and testing proposed to be conducted as part of PRG's exploration POD would not drawdown the aquifer beyond the immediate area. Since a large amount of drawdown is needed to release the methane from the coal surface, methane migration to outcrops should not be an issue with PRG's exploration project. Installation of monitoring wells to evaluate groundwater or methane migration on the Reservation is not warranted by the limited amount of water and gas that will be produced during exploration and testing. The BLM and the State of Montana are supporting a regional groundwater monitoring program which is being conducted by MBMG. This program includes both wells and springs. The monitoring report for the first year of this project is available at <http://www.mt.blm.gov/mcfo/cbng/CBNG-Monitoring.htm>. PRG is also required to conduct groundwater monitoring and reporting as a condition of the Powder River Basin Controlled Groundwater Area designation by the Montana Board of Oil and Gas Conservation (MBOGC Order 99-99).

197.Comment: The FEIS appendix CHE page 6 and also in the main text on page 4-8, 4-46, and 4-90 provides that analysis of the potential for methane drainage will be conducted on a case-by-case basis with site-specific data. Has an analysis been performed for this EA that determine the potential of methane drainage from Northern Cheyenne lands? (18)

Response: The nearest Northern Cheyenne lands are approximately 2.4 miles away (NW1/4 SW ¼, Section 24, T. 8 S., R. 40 E.). A study completed by the Reservoir Management Group of the Casper BLM office indicated that the reservoir pressure would have to decline between 10 to 40 percent before gas would begin to desorb from the coals in the Powder River Basin. The initial pressure in the Wall coal (the shallowest being tested) is approximately 124psi to 275 psi. This means that the pressure in the Wall would have to be reduced by at least 12.4 psi and possibly as much as 27.5 psi before gas might begin to desorb. The Flowers/Goodale formation has an initial pressure of 480 to 630 psi. This formation would have to be drawn down by at least 48 psi, and possibly by as much as 63psi, before gas might desorb from the coal. The 20 foot drawdown radius within the coal beds being tested would extend only about 0.4 miles. This drawdown would result in a pressure decline of approximately 8.7 psi at 0.42 miles. Even the pressure decline of 8.7 psi at 0.42 miles is not enough to cause gas to desorb from the coals being tested. Because the nearest Northern Cheyenne lands are over 2 miles away (nearly five times the 0.42-mile distance), no methane drainage would occur.

198.Comment: EA page 42, paragraph 1. This entire section is inaccurate. Not all Tribal concerns have been addressed in this document: Air issues do not address PM10 and PM2.5 and there has been no air modeling done as part of this analysis. Additionally, there is no significant analysis of cultural issues performed in this document. There is no discussion of the degradation of Water Quality associated with the Tribe's water rights and potential reductions in the marketability of those water rights. (18)

Response: BLM and DEQ believe that they have addressed the air quality, cultural and water quality issues thoroughly in the relevant revised sections of the EA. Additional information and analysis has been incorporated into the document. It should be remembered that the project is only for exploration drilling and testing, not commercial production. The concerns presented in the comment will be subject to further analysis if and when PRG proposes a POD for commercial production.

199.Comment: EA page 42, paragraph 3, This statement is misleading and inaccurate. There are several communities, other than Sheridan, near the area to be developed. These other communities include Birney, Decker, Kirby, Busby, Ashland, and Lame Deer communities. Just because these communities lie within or near the Reservation does not mean that they have any less standing as a community than any other populated area in the region. (18)

Response: The EA has been corrected. Sheridan was the community discussed because it is believed to be the place from which most of the workers associated with the project will commute.

200.Comment: EA page 52, paragraph 4, ITMAs would be impacted. Marketability of Tribal water rights could be significantly reduced. The EA does not adequately address the impacts to either surface or groundwater from the proposed project nor does it account for the Northern Cheyenne Tribe's Water Quality Standards and Water Rights in the Tongue River. The document does not account or mitigate the loss of water from groundwater aquifers. Cultural Plants could be impacted by discharges and erosion associated with development. Air Quality, Cultural, and Wildlife impacts are not adequately addressed in this document. (18, 19)

Response: The Cultural Resources Section of the EA has been revised to take into account many of the concerns raised over cultural resource issues. No TCPs, including plant gathering areas, were identified by the Northern Cheyenne THPO. No sites were found in areas of direct impact and those that were located in the inventoried portions of the POD are not eligible for the National Register of Historic Places.

Given the nature of the proposed water discharge, it is unlikely there would be an increase in erosion downstream from the project. The only riparian area to be directly impacted is the discharge point from the water treatment facility. This will result in less than an acre of effect and cause no major loss of riparian vegetation. As the analysis in the hydrology section of the EA demonstrates, there will not be any impact to water quality. The Tribe's water quality standards will not be violated and there will not be any loss of Reservation groundwater.

201.Comment: EA page 52, paragraph 5, Again, this section "Passes the Buck" for environmental analysis and does not allow for an informed decision to be made with regards to the approval of this development activity. (18)

Response: The narrative cited in the comment is part of the impact description under the no federal action alternative. The intention of that paragraph is not to "pass the buck;" but to acknowledge that where there is no federal action (i.e., BLM does not issue any permits), there are no specific procedures BLM has to follow regarding protection of trust resources or assets. The state would be the permitting authority under that alternative and would consider potential affects to tribal resources under state law.

Livestock Grazing

202.Comment: On Page 29 the EA states that additional water may create opportunities for additional water sources. Does Powder River Gas own any stock they intend to water with this water? Where is the water right for this beneficial use? (12)

Response: PRG does not intend to provide for livestock water or obtain a water right for beneficial use. Such a use might occur in the future and filing appropriation for livestock or irrigation use will be the responsibility of the landowner.

Social & Economic Conditions

203.Comment: Chapter 4, 4.3.7, Social and Economic Conditions, Direct and Indirect Effects: A statement should be added such as: "A water that is considered as lower quality is to be treated to a higher quality and then discharged into the Tongue River, should be considered as a valuable resource for a drought stricken region benefiting wildlife, livestock, irrigators and downstream communities". (9)

Response: The EA is supposed to analyze the changes in resource conditions from the proposed action and alternatives without making statements regarding value. The "value" of treated water discharge is reflected in the analysis of water quality in the Tongue River after mixing. In this case, the volume of water produced during the exploration phase and discharged into the river would be a miniscule addition to the total flow.

204.Comment: The current county roads cannot withstand the amount of traffic that will occur coming to and going from the project area. Will our taxes be raised to help repair and maintain the roads? (14)

Response: The proposal will only involve about 6 vehicles per day, during the 12 day drilling and testing period, with a decrease in traffic after well installation. The Conditions of Approval (COA) for this project includes provisions for the construction, upgrading, speed control and maintenance of access roads. This will minimize the impacts to existing roads. The project is not likely to result in a tax increase to support road maintenance.

205.Comment: the EA's analysis of the social and economic effects of the project on the Northern Cheyenne Reservation is superficial and inadequate. No consideration is given to the Tribe's exclusion from the large amounts of taxes, rents and royalties that will be generated by CBNG production in the project area. This disparity in treatment between State and local governments and Tribal government will exacerbate the already significant gap in the level of public services available on and off the Reservation. (18)

Response: The scope of the analysis is determined by the proposed action. In this case the proposal is only to drill up to 16 exploratory wells fifteen miles south of the Reservation. The temporary workers are expected to commute from the Sheridan, Wyoming area. There will not be any production taxes or royalties paid to the mineral owners or to the State. The project will not result in any disparity in revenue or impacts between the State and local governments and the Tribal government.

206.Comment: The environmental justice section should evaluate the fairness of a situation in which all of the economic benefits of a project flow to non-Indian communities while many of the risks and environmental impacts of the project will be experienced by an extremely poor Indian community. Mitigation in the form of impact funding should be evaluated to address this disparity. (18)

Response: The environmental justice section of the EA concluded there will be no disproportionate impacts to the Indian Reservations from the exploration project. This section of the EA has been revised to further explain this conclusion. Appendix CHE, page 15-16 of the Montana EIS discusses mitigation in the form of impact funding as suggested by the Northern Cheyenne Tribe and concludes that, "The BLM does not have the authority to require impact funding."

207.Comment: The Environmental Analysis provided by the draft EA prepared by the U.S. BLM is cursory at best and deficient across a broad range of environmental areas. Of overriding concern, however, is the total lack of analysis required under Environmental Justice as part of the NEPA requirements for this document. Environmental

Justice requirements state that no minority population shall receive a disproportionate level of impacts from any development covered under NEPA. In this instance, the Northern Cheyenne Tribe as a whole will be impacted by the proposed project. The draft EA for this project states that the population of Big Horn County, where the project is located, is 60 percent Native American and slightly over 30 percent of the population of Rosebud County is Native American. It seems that a majority of the population within these two counties is Native American and will be receiving a majority of the impacts associated with the proposed development. This document in no way sufficiently meets the requirements of Environmental Justice review under NEPA. (19)

Response: The 1994 Executive Order on environmental justice is not limited to actions covered by NEPA, but includes programs, policies and activities of federal agencies. The Order requires that federal agencies identify, consider and address, to the extent practicable and permitted by law, disproportionately high adverse environmental effect on minority populations; but did not create any enforceable procedural or substantive right, benefit, or trust responsibility. The environmental justice section of the EA concluded there will be no disproportionate impacts to the Indian reservations from the exploration project. This section of the EA has been revised to further explain this conclusion.

Soils

208.Comment: The list of impacts that are not addressed in the EA include the concentration of salts and metals in impoundments and reclamation of the impoundments. The EA needs to evaluate the concentration of salts and metals in the impoundments caused by evaporation and discuss reclamation issues such concentrated salts and metals could create. (10, 13)

Response: Some concentration of salts and metals will increase due to evaporation. This will occur in the impoundment for the flow through system prior to the produced water entering the treatment process. The salts and metals will not be deposited on the bottom of the impoundment as they would be carried into the treatment facility. Because the impoundment will have a polyethylene liner, salts and metals will not enter the subsoil and affect reclamation performance. The EA has been revised to address reclamation of the impoundments.

209.Comment: EA page 15, paragraph 1, and EA page 16, paragraph 4, Do not address reclamation associated with treatment facilities. Does not address how effluent ponds will be reclaimed. Does not address what will happen to soils left behind after treatment process is complete. (18)

Response: Treated water will be of higher quality than soil water in the area, so if any escapes, soil will not be detrimentally impacted. The polyethylene liner in the effluent ponds will be buried or removed and the area reclaimed. When no longer needed, the treatment plant will be dismantled and all equipment and structures removed from the site. Reclamation of the treatment plant area will not present any unique or special difficulties.

Vegetation

210.Comment: On page 43 there is reference to the possible spread of leafy spurge and invasive plants. What species will be propagated by road construction?. What about introduction of noxious weeds because of soil disturbance? Is a weed plan in place to prevent the spread of noxious weeds? What plans/mitigations will be required for noxious weeds? (5, 12, 18)

Response: Any species can be propagated by road construction/soil disturbance if weed seeds are present or brought in. A Noxious Weed Management Plan is in place to prevent the spread of noxious weeds. Each company must submit a weed plan and map any infestations. They are also required to treat these infestations for up to five years. The Montana State Weed law requires that all noxious weed infestations be treated as well.

211.Comment: EA page 43, paragraph 4. The vegetation section (3.9) fails to recognize the culturally significant wetland and riparian plant species as determined by the Northern Cheyenne. There is no analysis of culturally significant plants in this section. A list of these plants can be obtained from the Tribe. Mitigation efforts need to be outlined for impacted culturally important plant communities. (18)

Response: Additional information has been added to the EA based upon an on the ground review of the project area with the Northern Cheyenne THPO. No traditional plant gathering areas will be affected by PRG's exploration POD.

212.Comment: EA page 43, paragraph 4 and EA page 54, paragraph 2, These sections do not provide any analysis with regards to Culturally Significant plants in or near the project area. (18)

Response: These sections of the EA have been revised to reflect the results of an on the ground review of the project area with the Northern Cheyenne THPO.

Wildlife

213.Comment: On page 12 under FWS consultation. There are letters referenced in this paragraph. Are these letters included in the EA or are the letters vital facts added to this EA? (12)

Response: The letters referenced are the biological assessment (BA) and biological opinion (BO) consultation letters between BLM and the USFWS. These were not included in the EA, but they do contain information relevant to the EA. The biological assessment identifies the impacts to bald eagles from this project as "likely to adversely affect". Because of a lack of suitable habitat in the project area, a "no effect" assessment is made for mountain plover, interior least tern, gray wolf, Canada lynx, black-footed ferret, grizzly bear, pallid sturgeon, Ute ladies' tresses, Montana arctic grayling, and warm spring zaitzevian beetle. Potential habitat exists for black-tailed prairie dogs but no prairie dogs have been found on the project site. The BO concurs with the BA and specifies that no other mitigation measures are required in addition to those already included in the BO prepared on the MT FEIS (2003). The letters are on file at the BLM's Miles City Field Office.

214.Comment: The area below the Tongue River Reservoir dam was ruled too resource sensitive for the railroad to impact. The EIS developed for the TRR prohibited the building of the railroad in this section of the river because it was too environmentally sensitive. The river never freezes in this area and there are several species of wildlife that make their home in this area because they can remain there year-round. The Surface Transportation Board has already diverted development from this area. Because the river never freezes here, many wildlife and bird species use this area. It is vital to wildlife. How will this project be less devastating when it is fully implemented? The same exclusions should apply to the Powder River Gas proposal. (5, 6, 12)

Response: The magnitude and extent of the disturbance associated with PRG's exploration POD will be much less than what would result from construction and operation of the TRR. If the railroad was ever approved in this area, it would cause major surface disturbances to the river corridor. The magnitude of the disturbance would be considerably more in terms of direct habitat impacts (loss of habitat, increase in wildlife losses from animal/train collisions), and indirect impacts (area avoidance due to the noise level and frequent passage of trains, increase human presence due to periodic track maintenance, etc.), than what will occur with CBNG development. The well drilling and road building will be in the uplands away from the riverine corridor, and the disturbance will be short-term during well drilling. After the wells are completed, and even if production follows, there will only be periodic visits to the wells, as most well monitoring would be accomplished remotely.

215.Comment: Contrary to the information presented on pg. 44 of the EA, the stretch of river where the proposed outfall is located does not freeze during the winter because of the warm water coming out of the Tongue River Reservoir just upstream and has not frozen historically since the dam was finished in 1939. In fact, the Tongue River seldom freezes for three miles below the dam. Because this is the only section of

the Tongue River that does not freeze over, there is not "considerable alternative habitat" as stated on pg. 55 of the EA. Actually, it is a very important part of the Northern Flyway for waterfowl migration both spring and fall, and many ducks and geese winter over because of the open water. There are also over 100 breeding pairs of pelicans who utilize this part of the river in the spring with some staying throughout the summer. How will the CBNG polluted water affect the waterfowl, fish and aquatic life at and below the outfall location? Won't the disturbance also adversely affect the population of bald and golden eagles in the area, as they are also dependent on the Tongue River for their habitat and food source? (14)

Response: EA section 3.4.1 on surface water, section 3.10.4 on fisheries/aquatics, and section 4.2.10 contain a description of the direct and indirect effects to fisheries and aquatics; and for a discussion of water quality parameters and the potential effects on fisheries and aquatics. No polluted water will be discharged to the Tongue River and the impacts to fisheries and wildlife, including bald eagles and golden eagles, would be minor and not detrimental.

216.Comment: I did not find a thorough inventory of wildlife resources in the EA. Without a complete understanding of the resources that will be impacted by the development, I simply have to assume that habitat fragmentation will occur with consequences to at least some wildlife species. (5)

Response: The analysis for the MT FEIS identified wildlife species of concern and fish species thought to occur within the potential CBNG development area. This initial listing of species (Table WIL-1 and WIL-3 in the FEIS) was derived from the Montana Natural Resource Information System, the Montana Natural Heritage Program, and the U.S. Fish & Wildlife Service listing of threatened, endangered and proposed species. The list of terrestrial species identified in the MT EIS was also obtained from an evaluation of Montana Gap Analysis Program (GAP) Atlas, which identifies species expected to be found in habitats known to exist in the project area. The list was not repeated in the EA. However, PRG contracted with Western Land Services (WLS) of Sheridan, Wyoming to develop a Wildlife Monitoring and Mitigation Plan (WMPP) for the project area. In accordance with requirements set forth in the WMPP, wildlife surveys were conducted by WLS to identify wildlife occurrences and values in the project area. Additionally, BLM biologists have evaluated the area for wildlife values. The various wildlife species of major concern are discussed in Chapter 3, and impacts to wildlife and aquatic species are discussed in chapter 4 of the EA. Some habitat fragmentation will occur from the exploration proposal as discussed in the EA.

217.Comment: The 2003 FEIS Record of Decision requires PRG to complete a Wildlife Monitoring and Protection Plan for the project, including conducting baseline wildlife surveys. The WMPP is a component of the Plan of Development. The EA does not include the WMPP or even provide a description of such plan or the results of baseline wildlife surveys. (13)

Response: The WMPP for the PRG Exploration POD, was entitled "Wildlife Management Supplement," and was submitted as Attachment F of the Plan of Development. The "Supplement" identifies those species most likely to be affected and describes surveys to identify the presence or absence of these species. These data were used to write the wildlife sections of the EA.

218.Comment: There was little discussion of the prairie bird species in the area of development. The sage grouse is of particular concern. (5)

Response: There are no known sage grouse or sharp-tailed grouse leks within the boundary of the proposed project area, or even within a 2-mile buffer of the area. The EA discusses potential impacts to sharp-tailed grouse, not because of any known leks, but because there is potential sharp-tailed grouse habitat in the area. The EA wildlife sections 3.10.2 and 4.2.10 discuss sage and sharp-tailed grouse.

219.Comment: The list of impacts that are not addressed in the EA include bald eagles. The fact that the bald eagle has nested next to a road does not satisfy me that there won't be impacts from development to the bald eagle population of the area. What mitigations will be required to avoid raptor electrocutions? The EA does not even

discuss the number of miles of new overhead power lines that will be constructed, much less discuss the impacts of such power lines for the bald eagles nesting at the active site or eagles wintering in the Tongue River canyon. (5, 10, 13)

Response: The EA specifically discusses impacts to the bald eagle nest in Section 4.2.10. Because of the nest located about ½ mile from the project area, the analysis in the EA concludes that there will be a “likely to adversely affect” situation resulting from the implementation of the project, which is discussed in the biological assessment and the biological opinion. Under the mitigation requirements in the ROD for the MT FEIS, it states, “all above-ground electrical poles and lines will be raptor-proofed to avoid electrocution following the criteria and outlined in the Avian Power Line Interaction Committee (APLIC) (1994) and APLIC (1996).” The operator, PRG, has proposed to use almost all underground power facilities in their POD. Above ground structures will be limited to the minimal amount of facilities necessary to “drop” power from the existing overhead power line to underground distribution lines. While this will eliminate almost all potential for raptor electrocutions, raptor mortalities do occur even with properly installed raptor protection devices on new or retrofitted existing poles. The poles also represent a collision threat to raptors. The mitigation measures will minimize threats to raptors by reducing as much as possible the probability of a raptor electrocution or collision. However, because the mitigation cannot guarantee that the threats to mortality will be eliminated, the proposed project will continue to “likely adversely affect”, but will “not jeopardize the continued existence” of bald eagles in the project area.

220.Comment: Currently the eagles coexist with the county road traffic of less than 25 vehicles per week. Can they adapt to the increased traffic, CBNG infrastructure and increased human presence? Will activities result in nest abandonment? (13, 14)

Response: BLM recognizes the potential for increased impacts on the bald eagle nest due to additional CBNG-related vehicle traffic above the level currently observed. Under the proposed action, it is anticipated that during the 12-day drilling and testing period, there will be six vehicles per day accessing the area. It is not anticipated that this level of vehicle traffic on the road will impact the birds. BLM’s biological assessment (BA) stated, “It is recognized there will be substantially increased vehicle traffic on the Tongue River Road associated with this project. There will be increased likelihood of impacts to bald eagles as a result of increased vehicle traffic from this project. With this background information, BLM concludes this project is likely to adversely affect bald eagles in the project area.” The USFWS responded with a biological opinion (BO), which stated, “The PBO (Primary Biological Opinion for the EIS) analyzed the effects on bald eagles associated with full-field CBNG development on BLM land in the Powder River Basin of Montana, of which the currently proposed project is a part. In the PBO the Service concluded that the bald eagle would not be jeopardized by the full-field development. After reviewing the current status of the bald eagle, the environmental baseline for the action area, the effects of the Powder River Gas POD at T.8S., R.41E., Sections 6 and 7 in Bighorn County, Montana as managed by the Miles City and Billings Field Offices and the State of Montana, and the cumulative effects, it is the Service’s BO that the direct and indirect effects of the project, as proposed, fall within the effects analyzed in the PBO and are not likely to jeopardize the continued existence of the bald eagle. No critical habitat has been designated for this species; therefore, none will be affected.” This determination was made based on the requirement that certain terms and conditions will be met concerning mitigation and monitoring for this eagle nest as well as other wildlife species in the area (See the BO, included in the Wildlife Appendix, Volume II, of the MT FEIS). The minimum monitoring/mitigation requirements are presented in the Wildlife Monitoring and Protection Plan and is part of the operator’s proposed action.

221.Comment: EA-35 concludes that the project may potentially impact bald eagles-a threatened species under the ESA. The BLM must prepare an EIS. (13)

Response: The EA is tiered to the analysis in the MT FEIS. That document identified that development within the project area is “likely to adversely affect” bald eagles. That same assessment is carried through to the EA analysis for this project. The USFWS BO for this project concludes that the “direct and indirect effects of the project, as proposed, fall within the effects analyzed in the PBO (programmatic biological opinion in the EIS) and are not likely to jeopardize the continued existence of the bald eagle. Therefore, an EIS is not required.

222.Comment: EA page 44, paragraph 3, the fisheries and aquatics section (3.10.4) is very limited fails to mention aquatic invertebrates in the brief summary. The proposed discharge point is in the Tongue River just below the Tongue River Reservoir. This is prime trout habitat. What effect will these discharges have on the trout population? This is the only real trout habitat in Southeastern Montana. Has any baseline data been collected to determine the number of trout in this area? There is no baseline inventory of aquatic life including macro-invertebrate and periphyton-algae populations. What about changes in water temperature from produced water? What about the food sources and spawning areas for the trout? Has either of these been evaluated? What are the ecological ramifications of CBNG impacted aquatic macro-invertebrates toward fisheries and upper trophic level organisms, like the various endemic raptor species within the watershed? (6, 13, 18, 19)

Response: The EA has been revised to include information on the trout, macro-invertebrates, and periphyton-algae populations in the Tongue River; and potential impacts to aquatic resources. The water to be discharged into the Tongue River will be treated to meet water quality requirements that are protective of aquatic life, including area trout. The impacts to fisheries and wildlife, including raptors, will be minor and not detrimental.

223.Comment: On page 14 and 15 the chemical reactions of the water processing are discussed. At one point there is carbon dioxide gas created. Carbon dioxide is a strong attractant for mosquitoes. Will the ponds be shielded from mosquitoes? These ponds could become a breeding ground for mosquitoes that carry West Nile virus. What will be done at this site to prevent the spread of West Nile Virus to birds and humans? (12, 14)

Response: The pond has a design capacity of 420,000 gallons of water, leaving a 2-foot freeboard. Operational volume should be about 210,000 gallons. Water flow through the pond will be approximately 200 gpm; therefore pond volume will be exchanged at least twice per day. There is potential to increase mosquito habitat through the use of reservoir storage. As a result, West Nile Virus could increase, however, this project is only scheduled to operate for six months. This amount of time will limit the effect this project can have on mosquito populations. Future development (beyond these six months) will be analyzed under another environmental analysis.

224.Comment: On page 44 there is discussion of upland game birds. What will be done to prevent the wild turkeys from contracting West Nile Virus from mosquitoes in the ponds created by this project? (12)

Response: BLM is in consultation with researchers studying the dynamics of the spread of the disease and its effects in Montana. There is no evidence that treatment, either through the use of larvicides or malithion, on a site specific or basin-wide scale will have any effect on the overall spread of the disease. State agencies have not instituted, nor are they requiring treatment of mosquitoes at this time. Cumulatively, there are many sources of standing water beyond CBNG discharge that add to the potential for mosquito habitat. BLM will continue to monitor this issue in cooperation with the State agencies and researchers. If new information leads to the development of BMPs, corrective measures will be applied. Based on the current information, there is no evidence to definitely say this project would affect the spread of WNV in the area.

225.Comment: On Page 52, Section 4.2.10 and Page 60, Section 4.3.10 Wildlife, potential beneficial effects to wildlife, such as habitat diversification and habitat creation are not addressed. For example, newly disturbed ground surface associated with utility corridor (i.e., power lines, pipelines and roads) and drilling location reclamation does provide habitat of ground nesting species, such as the Mountain Plover. (16)

Response: Section 4.2.10 of the EA has been revised to include the potential creation of wildlife habitat for species such as the Mountain Plover.

226.Comment: The statement "Briefly, some species are impacted up to ½ mile by human disturbance (ie, song birds) while others may be impacted up to 2 miles by human disturbance (ie, sage grouse" is misleading. The 2-mile buffer around sage grouse leks is for the protection of nesting habitat. We don't

even understand why this statement was included insofar as it may apply to the sage grouse and sharp-tailed grouse. On page 42, section 3.10.2 "Upland Game Birds" states: The project area is considered good sharp-tailed grouse habitat, although the closest known lek is several miles away. Sage Grouse ... maybe found along the western edge of the project, although nearly all of the sagebrush in the area has been removed as a result of extensive spraying by the landowner..." (16)

Response: The cited statement is confusing and misleading and has been removed from the EA.

227.Comment: EA page 54, paragraph 6, It was previously mentioned in the document that Elk, Black bear, and Mountain lion use the area as a transitory route between more preferred habitats. There is no analysis that has been conducted in this document with regards to many issues associated with how migratory patterns would be disrupted and impacts to big game and other species of concern by proposed development and the cumulative effects on aquatic and wildlife resources when other developments came online. (18, 19)

Response: Although not specifically stated for elk, black bear, or mountain lion, the EA identifies indirect impacts to wildlife as, "...habitat fragmentation and displacement related to CBNG infrastructure and human-related disturbance and activities" (EA, Section 4.2.10, Para. 1). These species are rarely observed in the area, and CBNG activity will likely displace them to peripheral habitats as they move through the area to preferred habitats. Vehicle collisions could account for increased mortalities, but the chances of this happening are extremely small due to the infrequent occurrence of these species in the project area.

MPDES Permit Comments

228. Comment: With statements such as, "PRG did not submit baseline data in fulfillment of this requirement and adequate baseline data does not exist," (Statement of Basis, pg. 5) or, "In order to meet the criteria for these constituents, the applicant will be required to complete a mixing zone analysis prior to issuance of the final permit." (Statement of Basis, pg. 6) one would think the agencies would realize that the MPDES application is incomplete. If the MPDES application is incomplete, the analysis of impacts in the EA must be lacking as well. (10)

Response: The requirements for an MPDES permit application are identified in rule [ARM 17.30.1322]. It was the Department's analysis that this information was provided through the application and supplemental materials submitted by the applicant. Montana's nondegradation requirements, mixing zones rules and water quality standards require additional information for the granting of mixing zones or new source reviews that is not reflected in the permit application. The need for additional data does not always become apparent until the analysis is in progress or complete.

229. Comment: EA page 8, paragraph 3, As a result of the Friends of the White Swan Case, No MPDES permits may be issued for new or increased discharges to the waters of the State of Montana until TMDLs have been set for those waters based on the State's 1996 303 (d) list of impaired waters. Additionally, determinations for impairments and TMDLs do not utilize the Northern Cheyenne Water Quality Standards. (18)

Response: As stated in Public Notice MT-04-05, the DEQ finds that the issuance of this proposed permit does not conflict with the order, because: 1) the water body was listed on the 1996 303(d) list for flow alteration and was subsequently removed from the 2000 and 2002 lists for lack of sufficient credible data to support the listing; 2) EPA has determined that no TMDLs are necessary for water bodies impaired by "pollution" such as flow alteration; 3) the permit limits flow to a level deemed nonsignificant under the criteria of ARM 17.30.715(1); and, 4) the Department has prepared a waste load allocation in the event a TMDL is determined to be necessary for the listed water body that addresses flow.

230. Comment: EA page 41, paragraph 4, Why isn't all water produced being treated before discharge. It seems that this would be a better mechanism for ensuring that there are not violations of the State or Tribal Water Quality Standards for the Tongue River. (18)

Response: In the absence of technology based effluent limits that include an economic analysis of the cost of treatment, the effluent limits are based on compliance with the applicable water quality standards as specified in the MPDES discharge permit. As long as the discharge meets the effluent limits in the permit, the effluent may be blended prior to discharge. The permit limits that amount of untreated water to 10% and 20%, during the irrigation and non-irrigation season respectively.

231. Comment: EA page 41, paragraph 4, This section describes post-treated discharge water as having a SAR < 3.0. This is greater than the numeric SAR value of 2.0, as dictated by Northern Cheyenne Water Quality Standards. How will it be ensured that an SAR value of 2.0 is not exceeded by the discharge water, following EPA's approval of Northern Cheyenne's TAS? (18)

Response: If the Northern Cheyenne Tribe is granted treatment as a state (TAS) under the federal Clean Water Act and the proposed standards are approved by EPA, discharge permits issued upstream of the applicable water body may not violate the approved standards. The cumulative impact analysis shows that these standards would not be exceeded. Discharge permits are renewed every five years and applicable water quality standards would be evaluated at that time. Also, all MPDES permits contain a reopener provision that allows for modification of the permit if data suggest standards are exceeded.

**Response To Comments
Powder River Gas, LLC
MPDES Permit MT0030660**

On July 21, 2004 the Department issued public notice MT-04-05 stating the Department's intent to issue a wastewater discharge permit to Powder River Gas, LLC. The notice stated that the Department had prepared a draft permit, statement of basis, environmental assessment and would hold a public hearing on this matter on August 24, 2005 at the Bicentennial Library in Colstrip Montana. The notice required that all comments received or postmarked by August 24, 2004 would be considered in formulation of a final determination and issuance of the permit. The Comment period was extended by request to September 8, 2004.

The Department received 21 letters from various agencies, organizations and individuals on the MPDES permit. In accordance with ARM 17.30.1374, a transcript of the public hearing has been prepared and is attached herein as Appendix A. The Department has prepared a response to all significant comments as required by ARM 17.30.1377. The Department has considered these comments in the preparation of the final permit and decision.

Table 1 – List of persons submitting written comments.

<u>Commenter</u>	<u>Number</u>
Environmental Protection Agency (EPA)	1
Northern Cheyenne Tribe (Jeanne S. Whiteing)	2
Environmental Protection Agency (EPA)	3
Northern Cheyenne Tribe (Jeanne S. Whiteing)	4
Northern Plains Resource Council (Michael Reisner)	5
Montana Environmental Information Center (J. Barber)	6
Tongue River Water User's Association (B. Lindlief Hall)	7
Powder River Gas, LLC (Casey Osborn)	8
Starshine	9
Russell Blalack	10
Wade Sikorski	11
Charlene Woodcock	12
John Rogers	13
Russell Blalack	14
Henry Lischer	15
Bruce Rinnert	16
Fidelity Exploration & Production Co. (M. Bergstrom)	17
Watty Taylor	18
Diamond Cross Ranch (Phil & Denise Wood and L. O'Toole)	19
Matt Clifford	20
Eric & Nancy Thorson	21

Table 2 – List of persons submitting oral testimony at hearing.

Commenter	Number
Paul J. Mysyk (Powder River Gas, LLC)	22
Casey Osborn (Powder River Gas, LLC)	23
Mark Fix (NPRC)	24
Mack Cole (Montana for Responsible Energy Development)	25
Bill Courtney (Powder River Gas, LLC)	26
William WalksAlong (Northern Cheyenne Tribe)	27
Denise S. Wood (The Diamond Cross Ranch)	28
Terry Punt (Bones Brothers Ranch)	29
Art Hayes Jr. (Tongue River Water Users)	30
Gail Small (Native Action)	31

RESPONSE TO COMMENTS

- Comment:** Per the MOU for NPDES delegation, EPA requests an additional 30 days to review and comment on MPDES permit MT-0030660 for the Coal Creek Federal CBNG Development Unit. (1, 2)

Response: The comment period was extended from August 24, to September 8, 2004 or a total comment period of 50 days. The public comment period included a public hearing on August 24, 2004, at the Bicentennial Library in Colstrip Montana (PN-04-05).

- Comment:** The draft permit is identified as a minor industrial permit. EPA requests that for the purposes of information sharing this permit be considered a significant minor permit. Please add EPA's address to Permit Condition II.D. for the receipt of Discharge Monitoring Reports. (3)

Response: The permit will be modified to require submittal of Discharge Monitoring Reports forms be sent to EPA.

- Comment:** Please provide in the Statement of Basis what assumptions concerning the scope of the project which were used by DEQ to prepare the draft permit. (3)

Response: As discussed in the statement of basis (Part II.A), the proposed project includes both the exploration phase and full development should the operator choose to pursue this option. This volume is also documented in the administrative record for the permit. As noted by the commenter, all effluent limits and analysis in the statement of basis were based on 2.56 cfs. The full build out would occur within the term of the proposed permit. The permit limits the discharge to 2.5 cfs.

- More frequent WET testing is necessary to capture seasonal variations and to provide adequate data to make a reasonable probable analysis of the need for a WET limit. Collection of a total of 3 acute and 3 chronic wet tests over five years is unlikely to provide an adequate database to make a decision on the need for an effluent limitation in future permits or permit modifications. (3, 5, 17)

Response: The draft permit required annual acute and chronic WET testing. As the commenter notes, the proposed frequency does not address annual variation. The permit has been modified to require quarterly chronic two species WET testing. If no toxicity is observed for twelve consecutive months, testing will be reduced to alternating one species quarterly testing. Separate acute testing will be required. Acute testing toxicity will be determined from chronic testing results.

5. The Statement of Basis states “the treatment technology is capable of removing sodium to less than 0.5 mg/l.” However, PRG proposes to treat a portion of the effluent and blend it with untreated CBM water to meet water quality standards for EC and SAR prior to discharge to the Tongue River.” Please provide an explanation of how and in what amounts treated and untreated waters will be blended to meet the water quality standards prior to discharge. (3)

Response: The original application indicated that 100% of the produced water would be treated by ion exchange. The application was modified on February 5, 2004. In response to the Department deficiency letter, the applicant stated, “a percentage of the produced water will be treated while the remaining percentage will be blended into the effluent stream (Casey Osborn, March 4, 2004). The applicant has provided additional information on blending, including an updated line diagram, as required in Part III.B (September 16, 2004) and blending percentages (Casey Osborn, personnel communication, October 10, 2004). In addition, the following conditions will be added to Part I.B of the permit:

March 1 thru October 31: The percentage of blended water shall not exceed 10% of the produced water delivered to the facility.

November 1 thru the last day of February: The percentage of blended water shall not exceed 20% of the produced water delivered to the facility.

Blending of treated and untreated water that does not exceed the level specified in this Part shall not be considered bypass of treatment under Part IV.G of this permit.

The requirement for submittal of plans and specification in Part I.D of the permit and monitoring requirement in Part I.C will be modified to incorporate monitoring of the blend of wastes streams.

6. The permit should specify that the most sensitive Part 136 methods shall be used. For mercury, Method 1631, Revision E should be specified. (3)

Response: In accordance with 40 CFR 122.41(j)(4) and 122.4(i)(4), the permit requires that samples be analyzed in accordance with test procedures approved under on 40 CFR 136. There are currently seven approved methods for the analysis of mercury on this regulation. The permittee may select any one of these methods that can achieve the minimum level specified in the permit.

7. No public hearing was set or has been held to take comments on the EA. The MPDES permit should not be issued until a public hearing is held on the EA. (4, 27, 30)

Response: A public hearing was held jointly on the draft permit and the Environmental Assessment (EA). The Department, in cooperation with the U.S. Bureau of Land Management (BLM), prepared a joint EA on the proposed action. The BLM distributed copies of the EA to interested parties and made the document available on the web site (www.mt.blm.gov/mcfo/). The Department prepared a public notice and distributed the notice to interested parties. Copies of this material were posted on the Department’s web site (www.deq.state.mt). The public notice for the public hearing stated the time, date and location of the hearing and that comments would be accepted on the draft permit, statement of basis and environmental assessment. Environmental impacts of coal bed methane were also discussed and analyzed in the Statewide Oil and Gas Environmental Impact Statement (January, 2003). A separate hearing on the environmental assessment is not necessary. These actions fulfill the Department’s requirements under the Montana Environmental Policy Act (MEPA).

8. Issuance of the MPDES permit is in conflict with the court's order in Friends of the Wild Swan v. U.S. Environmental Protection Agency, 130 F.Supp.2d 1199 (D. Mt. June 21, 2000). There, the court ordered that "[u]ntil all necessary TMDLs are established for a particular WQLS, the EPA shall not issue any new permits or increase permitted discharge for any permittee under the National Pollutant Discharge Elimination System permitting program." Id. at 1203. (4, 27, 31)

Response: As stated in Public Notice MT-0405, the DEQ finds that the issuance of this proposed permit does not conflict with the order, because: 1) the water body was listed on the 1996 303(d) list for flow alteration and was subsequently removed from the 2000 and 2002 lists for lack of sufficient credible data to support the listing; 2) EPA has determined that no TMDLs are necessary for water bodies impaired by "pollution" such as flow alteration; 3) the permit limits flow to a level deemed nonsignificant under the criteria of ARM 17.30.715(1); and, 4) the Department has prepared a waste load allocation in the event a TMDL is determined to be necessary for the listed water body that addresses flow.

9. DEQ should refrain from issuing the proposed permit until such baseline data is available to adequately determine impacts and impose permit limits. Such data is particularly critical given the substantial nature (2.56 cfs) of the proposed discharge. (4, 10, 15, 16, 24, 30, 31)

Response: DEQ disagrees that there is insufficient baseline data to issue the permit. There is extensive water quality data in the Tongue River watershed that has been collected in the Tongue River watershed since 1975 for a majority of the parameters of concern. There is also ongoing data collection and information collected from numerous sampling sites on the basin and coal bed methane wells in the watershed, including the monitoring data obtained by DEQ from Fidelity. Although the data and information is not specific to the precise location of the proposed permit, the data is sufficient to support the assumption that issuing the permit will not cause violations of Montana's water quality standards and nondegradation requirements in the Tongue River.

Based upon the information available to the DEQ, the language in the statement of basis explaining that there was insufficient baseline data to calculate a water quality based permit limit (WQBEL) for various parameters does not mean that the DEQ is totally uninformed with respect to water quality in the Tongue River and discharges from coal bed methane wells. The statements were merely intended to explain that data at the precise location is not available to calculate a WQBEL according to approved MPDES methods. Based upon current and historic data, however, DEQ believes that the discharge will not violate water quality standards or cause degradation.

As a precautionary measure to ensure that DEQ's assumptions and information are correct, DEQ is requiring extensive monitoring for numerous parameters that are identified in Tables 1 through 3 in the statement of basis. In addition, during the exploratory phase of development the discharge rate will be less than the projected 2.56 cfs expected at full development. During this interim period of lower discharge, the DEQ will closely scrutinize the monitoring data submitted by PRG to ensure that the assumptions used in issuing the permit were correct, i.e., the discharge will not violate any applicable water quality standard or nondegradation requirements. In the event DEQ's assumptions are proven incorrect for one or more of the monitored parameters, the DEQ will re-open the permit to specify a WQBEL for the parameter based upon the on-going data collection at the site.

Based upon the above, DEQ believes it is reasonable to issue the permit on the assumption that no water quality impacts or degradation will occur. If the data indicates that there is a potential impact, the permit will be re-opened to address the problem.

10. In light of these conditions, the additional information relating to the mixing zone should be made public and the public allowed to comment on the mixing zone prior to issuance of any final permit. (4, 24)

Response: The permittee has requested that the entire design flow (7Q10) of the stream be used to develop permit effluent limits for some parameters (pH, temperature, fluoride and others). In order for the Department to allocate the entire design flow of the receiving water body, the mixing zone must be considered nearly

instantaneous [ARM 17.30.501(7)]. A nearly instantaneous mixing zone may be granted when there is an effluent diffuser that extends across the entire stream or the discharger demonstrates in accordance with a study plan approved by the department that the effluent is fully mixed within two river widths. The permit requires that the applicant submit a diffuser designed to meet these criteria and an analysis of the discharge using either Cormix or Plumes. These models were developed by EPA based on fluid mechanics and hydrodynamics and are considered 'industry standards'. Should this submittal demonstrate that a mixing zone extending more than two river widths, or not meeting the criteria of the rule, is necessary, the Department would reopen the permit to accept public comment. In the absence of such a finding, additional public comment is not warranted. Department files are open for public review during business hours. Copies of this material will be made upon request for a reasonable charge.

10. Similarly, the draft permit does not take into account or address how the permit will operate under the test well period or during other temporary periods, or in the periods thereafter. DEQ must conduct an analysis of this proposed operation and address it in the Statement of Basis in the proposed permit. (4)

Response: The effluent limits in the permit apply to the discharge of produced water to state waters and does so without regard to whether the operation is considered temporary (exploratory) or a permanent facility. The permit, consistent with the Montana WQA, prohibits the discharge of waste at any location and method other than those expressly authorized in the permit.

11. The permit does not take into account the Northern Cheyenne Tribe's water quality standards which were adopted by the Tribe in June, 2002 pursuant to Resolution No. DOI-016 (2002). Particularly as to SAR and EC, the Tribe's standards provide for a more gradual increase in SAR and EC than the standards referenced in the permit. Since the Tribe is immediately downstream from the proposed development and is most impacted by such development, the Tribe's water quality standards, while not yet approved by EPA, should be treated as criteria against which impacts are determined. (4, 27, 31)

Response: The Department respects the Tribe's right to set and enforce local ordinances to protect environmental quality. At this time, the Northern Cheyenne standards are not approved under the federal Clean Water Act. The downstream impacts were analyzed in the environmental assessment and this analysis demonstrated that the increase in concentration of EC and SAR would not adversely affect these values.

12. As indicated in the Tribe's [sic] comments at the hearing, an issue of particular concern to the Northern Cheyenne Tribe is the fundamental question of the nature and right to water produced from CBNG development. Until this issue is resolved, DEQ should refrain from issuance of permits relating to such water. (4, 27, 31)

Response: State and federal regulations list the specific causes for which a permit issued under the National Pollutant Discharge Elimination System (NPDES) may be terminated or denied [ARM 17.30.1363 and 40 CFR 122.64]. In summary these 'causes' are: 1) noncompliance with a permit condition; 2) the permittee's failure to fully disclose relevant information or misrepresentation of facts; 3) endangerment of human health or environment; and, 4) elimination of the condition regulated by the permit. According to the rules cited above, the Tribe's claim of first right to the discharged CBNG water is not a "cause" for denying issuance of the permit.

13. The DEQ should have denied PRG's application because it was incomplete. (5, 6, 10, 17, 20)

Response: The requirements for an NPDES permit application are identified in rule [ARM 17.30.1322]. It was the Department's analysis that this information was provided through the application and supplemental materials submitted by the applicant. The issuance of a discharge permits may only be denied for cause (See comment 13). Montana's nondegradation requirements, mixing zones rules and water quality standards require

additional information for the granting of mixing zones or new source reviews that is not reflected in the permit application.

14. DEQ has violated the federal Clean Water Act (CWA) and the Montana Water Quality Act by failing to develop and require technology-based permit limits for all parameters of concern using its Best Professional Judgment (BPJ). According to this commentor, 40 CFR §§ 122.44 and 125.3, which are incorporated by reference in the MPDES rules, require DEQ to develop technology-based treatment requirements on a case-by-case basis under § 402(a)(1) of the CWA in the absence of EPA-promulgated effluent limitations. The commentor cites various federal cases in support of using BPJ, including *Trustees for Alaska v. EPA*, 749 F.2d 549, 553 (9th Cir. 1984); *NRDC v. EPA*, 863 F.2d 1420, 1424 (9th Cir. 1988); and *Texas Oil & Gas Ass'n v. EPA*, 161 F.3d 923 (5th Cir. 1998). (5, 24,29)

Response: DEQ disagrees that it has violated the CWA and the Montana Water Quality Act by declining to develop and require technology-based effluent limits for all parameters of concern using BPJ. Neither the federal rules nor the cases cited by the commentor mandate the development of technology-based effluent limits on a case-by-case basis.

According to 40 CFR § 122.44, "each NPDES permit shall include conditions meeting the following requirements *when applicable*." Among the conditions required by the rule "when applicable" are technology-based effluent limits promulgated by EPA or effluent limitations developed on a case-by-case basis under § 402(a)(1) of the CWA or a combination of the two according to the factors in § 125.3. Since there are no EPA-promulgated effluent limitations for coal bed methane produced water, the commentor argues that DEQ must develop technology-based standards using BPJ under § 402(a)(1) of the CWA based upon the factors in § 125.3(c),(d). This comment ignores the fact that technology-based limitations listed under § 122.44 are required for NPDES permits only "when applicable." It is the DEQ's position that developing BPJ under § 402(a)(1) of the CWA is not applicable, because that section of the CWA authorizes EPA, not the states, to develop case-by-case permit limits.

Under § 402(a)(1) of the CWA, NPDES permits may be issued provided that either of the following conditions are met: "(A) all applicable requirements promulgated under sections 1311, 1312, 1316, 1317, 1343 of [the Act]; or (B) prior to the taking of necessary implementing actions relating to such requirements, *such conditions as the Administrator determines are necessary* to carry out the provisions of [the Act]." (emphasis added).

In construing this provision, the Ninth Circuit has *not* held that § 402(a)(1) mandates the development of case-by-case effluent limitations by the states, as argued by the commentor. Instead, the Ninth Circuit has interpreted the language as "authorizing" EPA to use its "discretion" to develop technology-based effluent limits in the absence of promulgated industry-wide standards. See, *Trustees for Alaska*, 749 F.2d at 553; *NRDC*, 865 F.2d at 1425. Nothing in the cases cited by the commentor suggests or implies that § 402(a)(1)(B) also authorizes the states to develop effluent limitations for individual permits. Although the commentor quotes a Fifth Circuit opinion indicating that all NPDES permits *must* incorporate technology-based limitations developed under § 402(a)(1)(B), that case involved a challenge to BAT limitations developed by EPA for a class of industry under § 301. Accordingly the quoted language is dicta since the issue of whether or not the CWA requires EPA or the states to develop case-by-case effluent limitations was not before the court. *Texas Oil and Gas Ass'n*, 161 F.3d at 928.

The DEQ's position that § 402 does not mandate states to develop technology-based limitations is supported by the U.S. Supreme Court's construction of the CWA in *E.I. du Pont de Nemours & Co. v. Train*, 430 U.S. 112 (1977). In *Train*, the petitioners argued that EPA had no authority to promulgate industry-wide treatment standards under § 301 of the CWA. In their view, the provisions of § 301 are to be used by states in the development of technology-based standards on a case-by-case basis for individual permits. In upholding EPA's authority to promulgate nation-wide standards under § 301, the Court rejected the argument that § 402 requires states to develop technology-based effluent limits for individual permits. The Court found that, while § 402 requires permits to comply with § 301, "[§ 402] does not mandate either the Administrator or the States to use permits as the method of prescribing effluent limitations." *Id.* at 120.

Since the CWA does not mandate states to develop technology-based limits for individual permits according to the cases cited above, the DEQ does not agree that it has violated the CWA or Montana's Water Quality Act by declining to do so.

16. MDEQ has violated the CWA by failing to develop and require water quality based effluent limitations for all parameters of concern. (5, 15, 16, 24, 29,30)

Response: The permit contains effluent limit or conditions for all parameters of concern which have a reasonable potential to exceed a state water quality standard in accordance with 40 CFR 122(d)(1) (Part IV of the Statement of Basis). Parameters of concern that were not shown to have a reasonable potential but are known to be present in the discharge were required to be monitored to ensure the adequacy of the analysis and the assumptions made about the efficiency of the treatment system.

17. Surface water quality monitoring is inadequate to determine the potential impacts of discharges on surface water quality. (5, 6)

Response: The permit contains extensive monitoring of both the effluent and Tongue River. Upstream monitoring is necessary to adjust wasteload allocation in future permit actions if other sources in the basin have adverse impacts on water quality.

18. Biological monitoring is inadequate to determine the potential impacts of discharges on surface water quality. (5)

Response: The permit requires monitoring of periphyton communities in order to ensure compliance with Montana's Nondegradation criteria. The commenter recommends that macroinvertebrate monitoring be included as a condition of the permit. Impacts to the macroinvertebrate community were not identified in the analysis as an area of concern. The permit requires whole effluent testing (WET) of the effluent and receiving water on a salt sensitive invertebrate and fish species that will provide additional information on the impact to aquatic life.

19. The MPDES permit allows major modifications without the opportunity for public comment in violation of the CWA and MWQA. (5)

Response: The conditions for permit modification are identified in ARM 17.30.1365. The permit does not contain any provisions that circumvent or modify these requirements. The comment incorrectly states that the permit allows minor modification of the permit for the addition of new outfalls. The basis for this comment is not clear.

20. The MPDES permit allows degradation of the Tongue River without an authorization pursuant to MCA §75-5-303(3) and thus violates MCA §75-5-303(2). (5)

Response: The comment suggests that the permit allows degradation of state waters by: 1) allowing several parameters (nutrients), pH and temperature to exceed nondegradation thresholds; 2) not requiring the adequate data; 3) making a tentative decision on mixing zones; and, 4) not requiring best available pollutant treatment technologies. Issues 2 through 4 have been addressed in previous comments (Issue 2 see response to comment 9; Issue 3 see response to comment 10; and for Issue 4 see response to comment 15) and are not a basis for determining an activity significant. With respect to Issue 1, the Department's Nonsignificance Determination in Part VII of the Statement of Basis identified that the concentration of nutrients may exceed nondegradation criteria but were not expected to cause a measurable effect on any designed or existing beneficial use [ARM 17.30.715(1)(g)]. For pH and temperature, the Department has determined that any change in exiting water quality for these parameters is nonsignificant based on conformance with the criteria of 75-5-301(5), MCA, in accordance with ARM 17.30.715(3). This determination must allow for public comment pursuant to ARM

17.30.1372. During the comment period, the Department has not received any information that would indicate that allowing a small change in quality, within the mixing zone, would have any adverse affect on any designated uses. Limits in the permit for pH and temperature (flow) prevent the exceedance of the water quality standard for these parameters. The permit contains enforceable provisions that do not allow an increase in carcinogens or toxic parameters.

21. Nondegradation approach for EC and SAR is unconstitutional. (5)

Response: The Board of Environmental Review has adopted water quality standards and nondegradation requirements for the constituents [ARM 17.30.670]. The constitutionality of the rule is beyond the scope of the MPDES permit.

22. The MPDES permit fails to include the required mass limitations for pollutants. (5)

Response: ARM 17.30.1345 requires that all permit limits be expressed in terms of mass except for pollutants such as pH, temperature and radiation which cannot be expressed in terms of mass; when applicable standards are expressed in other terms, and when technology based limits are developed on a case by case basis. Limits for electrical conductivity (EC) and sodium adsorption ratio (SAR) cannot be expressed in terms of mass. Because these are the primary constituents regulated in the permit and these parameters cannot be expressed in terms of mass, the permit limits the instantaneous discharge volume to 2.5 cfs, in addition to limits on the quality of the effluent. This condition effectively controls the mass (concentration per unit time).

23. Because the 30 day comment period on the EA has not expired, and therefore not all public comments on the EA have been received, and because the EA has not been finalized, we think that drafting and publishing the MPDES permit is premature. (7, 27)

Response: A final permit cannot be issued until the Department has prepared a response to comments in accordance with ARM 17.30.1377 and prepared a proposed permit with any changes that are necessary as a result of public comment. The Department's response to comments and final decision will be sent to everyone who has submitted comments on the draft permit. The comment period on both the draft permit and EA was extended to September 8, 2004 (see response to comment 1.). The comment period on the EA closed concurrently with the comment period on the permit.

24. First, the draft permit at section I. C. Self-Monitoring Requirements, requires that the effluent rate is to be measured in gallons per minute (gpm) and that it must be monitored continuously. However, the draft does not state whether real time flow meters are required at the end of the pipe at the outfall points to enable the DEQ/Powder River Gas Co. to properly measure and ensure that the instantaneous discharge effluent limits is not exceeded. We think real time flow meters measuring the gpm should be required. (7)

Response: The permit requires continuous monitoring of effluent volume. This will require the permittee to install a continuous flow-monitoring device. The permittee will be required to report instantaneous maximum and average daily flow for the reporting period.

25. We also note that at Section I. B., the draft states that the instantaneous discharge is not to exceed the 2.5 cfs, providing a volume limit, and that the monitoring provision in section I. C. requires monitoring in terms of flow rate, or gpm. It may be helpful [sic] the public to see a conversion table of volume (cfs) to flow rate (gpm) showing how many gpm 2.5 cfs converts to. (7)

Response: There are 448.8 gpm in 1 cfs; 2.5 cfs is equivalent to 1,122 gpm.

26. We also note that at section I. C., while specific conductivity must be monitored daily using an instantaneous sample, the SAR is only required to be sampled/monitored weekly using grab samples. Because the two are so closely interrelated, and because it is imperative that SAR be closely monitored to protect the water, soils and crops of the Tongue River Water Users' Association and its members, we strongly believe that the SAR should be monitored and sampled daily. (7)

Response: In establishing monitoring frequencies, the Department must consider a number of factors, including type of treatment system, compliance history, cost of monitoring, presence or absence of batch releases and other factors. Electrical conductivity (EC) can be measured on-site and is therefore relatively inexpensive compared to other parameters. It can be used as a surrogate for other parameters and process control purposes and therefore was monitored more frequently. SAR requires laboratory analyses of several parameters (sodium, calcium and magnesium). The treatment process involves internal batch process, however, treated water from the IX unit will report to a 1.28-acre containment pond (Permit Application). This pond will provide equalization of treated waste streams prior to discharge. For these reasons, the sample frequency will not be changed, however, the sample type has been changed from grab to composite, which will provide a more representative sample.

27. In section II. Monitoring Recording and Reporting Requirements, we note that some sections use the term "shall" for mandatory requirements, and "must be" or "will be" in other places. For consistency and clarity, we think the permit should consistently use the term "shall" when setting forth mandatory requirements. (7)

Response: The majority of language in this section appears in state and federal regulations. The federal regulations require that this language shall be incorporated into permits either expressly or by reference (40 CFR 122.41). The language has been reviewed for consistency and changed from 'must be' or 'will be' to shall unless this caused a direct conflict with the applicable regulation.

28. There has been very extensive characterization of CBNG water in this area and of the Tongue River. We recognize that the DEQ is interested in conducting more detailed sampling of the Tongue River and CBNG discharges at the proposed discharge site. However, we believe references in the permit to additional data needs should be qualified to clearly indicate these data are supplementary and that the permit as proposed is protective of water quality. (8, 24, 30, 31)

Response: The DEQ disagrees that references in the permit to additional data needs should be clarified to state that the data are supplementary. The monitoring data is needed to determine if WQBEL limits are necessary for any of the monitored parameters at the time of renewal and also serves the purpose of ensuring that the permit is protective of water quality from the moment it is issued. DEQ does agree, however, that the permit is protective of water quality as proposed. See Response to Comment No. 9.

29. As the MPDES application data show, all trace metals in the test samples are below detection limits. DEQ included a number of other trace metals in their analysis of permit limits that are not typically associated with CBNG water and consequently data needs for these constituents were not anticipated by PRG. There are however, extensive data from other monitoring sites on the Tongue River and from CBNG wells in this area that provide a basis to evaluate whether these are potential constituents of concern. A statistical summary of CBNG water quality data is included as part of Fidelity's MPDES permit renewal application (Schafer, 2004). Constituents such as mercury and selenium that are cited in the permit as having insufficient data are consistently below detection in CBNG wells from this area. It is PRG's intent to request reduced monitoring requirements prior to the renewal period once we demonstrate responsible operating practices and establish a larger baseline database. (8, 17)

Response: The permittee may request a modification of permit limits subject to ARM 17.30.1365. This data, if properly collected and analyzed, will be useful in determining whether or not effluent limits are necessary for these constituents.

30. Nutrient limits are another area where operational monitoring is being required. Nutrients have historically not been a principal constituent of concern for CBNG discharges. Low levels of nitrogen that are present in the form of ammonia are rapidly volatilized or assimilated within a very short distance of the outfalls and do not persist downstream. PRG has included instream monitoring in their proposal to confirm that nutrients from discharges will not impact water quality. Since nutrient limits are based on narrative standards this is the best method for assessment. (8)

Response: Nutrient, including total nitrogen and phosphorus are present in the effluent at low levels and may affect plant growth. Since this response is difficult to predict, especially at low levels, the Department has required that the permittee conduct biological monitoring of the receiving water for the term of the permit. In addition to ammonia, other nitrogen compounds are present in the effluent and may not volatilize as readily as ammonia.

31. This regulatory analysis puts unjustified emphasis on the word “unaltered” in ARM 17.30.670(7), ignoring the immediately following provision which expressly makes the flow-based analysis applicable to evaluation of disposal (e.g. treatment) systems. To avoid negating the essence of 670(7), the word “unaltered” in this context can only mean simply that no industrial waste is added to the water after it is produced. In addition, ARM 17.30.670(1) makes it clear that the flow-based analysis will always apply in determining whether the standards set forth in section 670 are met. (8, 17)

Response: The applicant has not indicated a need for these flow-based limits; therefore this wording will be removed from the Statement of Basis. This change will not affect limits or conditions in the permit.

32. Coal bed methane development will only last a few years but ranchers and farmers HAVE MADE MONTANA WHAT IT IS. Please sign water well mitigation agreements with ALL OF THE FARMERS AND RANCHERS affected by these wells so they can survive AND BE HERE WHEN THE METHANE IS GONE. (9)

Response: Water well mitigation agreements are not addressed in the MPDES permit or water quality standards. This issue will be addressed in the response to comments on the environmental assessment prepared by the Bureau of Land Management and Montana Board of Oil and Gas.

33. Under the U.S. Clean Water Act, Powder River Gas must implement the best available technology that is affordable. Powder River Gas can afford to treat 100% of the water so no additional salts or contaminants pollute the Tongue River. (10, 15)

Response: Technology based limits are discussed in the response to Comment 15.

34. Your assessment failed to consider the alternative of reinjection or injection of coal bed methane wastewater to reduce the overall loss of water from drinking aquifers. Injecting wastewater back into the aquifers from which it is taken, or into other depleted aquifers in the area, prevents the depletion of a valuable water resource and could minimize impacts to the surface water and land in the area. (10, 15, 16, 19, 24, 28, 29)

Response: Injection of produced water from CBM development is not a requirement of the Montana Water Quality Act or federal effluent limits guideline. For more information on technology based requirements, please refer to the response to Comment 15.

35. Failing reinjection or injection, Powder River Gas must provide water well mitigation agreements with all the ranchers in the area who may lose their wells due to aquifer drawdown. I urge you of the BLM to require Powder River Gas to sign water well mitigation agreements with all landowners in the area before approving the project. (10)

Response: Water well mitigation agreements are not addressed in the MPDES permit or water quality standards. This issue will be addressed in the environmental assessment prepared by the Bureau of Land Management and Montana Board of Oil and Gas.

Injection of produced water from CBM development is not a requirement of the Montana Water Quality Act or federal effluent limits guideline. For more information on technology based requirements, please refer to the response to Comment 15.

36. The permit suggests that brine resulting from the treatment process might be used “beneficially,” but it fails to outline possible beneficial uses. The Department needs to list possible beneficial uses and implications for water rights, etc. (15, 16, 24)

Response: The brine or treatment wastes have been determined to be a hazardous waste and will be disposed of at a Class I UIC permitted injection well in Wyoming. Removal and transport of brine will be in accordance with all state, local and federal regulatory requirements.

37. The permit fails to address non-degradation requirements established by the Northern Cheyenne Tribe. The permit should satisfy these requirements. (15, 16)

Response: Tribal water quality standards are discussed in response to comment 12.

38. References in the permit to additional data needs may mislead the public into thinking that insufficient representative data are available for this permit analysis. Any statements about insufficient data should be qualified to clearly indicate these additional data would supplement existing data from numerous sources. Existing data are sufficient to develop this permit as proposed. (17)

Response: See Response to Comment 9.

39. The proposed permit is protective of Tongue River water quality. (17)

Response: Standards adopted by the Board of Environmental Review protect the designated uses of the Tongue River. The permit incorporates these water quality standards.

40. The proposed treatment system is designed to meet water quality standards for the principal constituents of concern (POC) at the end of the pipe. For their project, the POC are Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR). In addition to treating the water for EC and SAR, the EMIT treatment process will also remove other constituents, including trace metals, if present. A statement clarifying the capabilities of the treatment plant to address such constituents should be included in the appropriate section of the SOB. (17)

Response: The treatment system has been shown to remove major cations. The Department does not have data to support this statement for all trace metals. The Department will rely on monitoring to ensure compliance with permit limits and conditions.

41. Table 2 specifies monitoring for Toxicity, acute and Toxicity, chronic. The methods specify using different species for acute and chronic testing. Fidelity recommends utilizing *Daphnia magna* for both acute and chronic testing. Wyoming Department of Environmental Quality (WDEQ) reportedly has conducted extensive WET testing within the Powder River Basin using *Ceriodaphnia dubia* and *Daphnia magna*. WDEQ has determined that *Daphnia magna* is the most appropriate species for ongoing and future toxicity

testing. Use of *Daphnia magna* will allow MDEQ and WDEQ to more easily compare and contrast their toxicity testing results in the Powder River Basin since both agencies will have comparable data. (17)

Response: There is no apparent reason to standardize test species between Wyoming and Montana. All Montana issued permits that require WET testing specify the use of *Ceriodaphnia dubia*. The department believes that it is more important to maintain consistency within the State. The permit will not be amended to require testing with *Daphnia magna*.

42. Art.IX, Sec. 1 and 3, we firmly believe that the granting of this application violates the State Constitution. (19,28)

Response: The Department believes that the permit complies with all applicable water quality standards including nondegradation and therefore does not violate the Constitution.

43. Groundwater pumping associated Coal Bed Methane (CBM) development will cause substantial drawdowns of affected aquifers on both a local and regional scale. Full aquifer recovery will require hundreds of years. Vested water rights will be impaired. Farmers and ranchers will suffer economic impacts. (19, 28, 29)

Response: Ground water drawdown is discussed in the environmental assessment accompanying the MPDES permit. The permit regulates the discharge of wastes to state waters not water rights.

44. The chemical composition of the CBM waste water is quite different from the surface water in Montana where it is discharged. CBM waste water has elevated levels of salinity, fluoride, ammonia, selenium, cadmium, copper, iron, bicarbonate, lead, zinc, mercury, barium, nitrates, and manganese. The salinity levels cause soil structure changes that make water less available to plant roots and can directly damage plants. (19)

Response: The Board of Environmental Review evaluated these factors when it adopted numeric water quality standards for EC and SAR. Existing water quality standards for trace metals are protective of agricultural and aquatic life uses (Department Circular WQB-7). These standards have been evaluated in the development of the permit and effluent limits established for those parameters which have a reasonable potential to exceed a state water standard. There is no water quality standard for the bicarbonate ion. The permit requires whole effluent toxicity testing that will determine if the ion exhibits toxicity to aquatic organism. Once mixing with the receiving water occurs any toxicity will be greatly diminished.

45. The applicant does not explain what it proposes to do with the CBM waste water as it comes out of the ground. (19)

Response: The water will be treated to reduce EC and SAR and discharged to the Tongue River under the terms of the MPDES permit.

46. Article IX, Section 2(1) of the Montana Constitution provides that “all lands disturbed by the taking of natural resources shall be reclaimed.” CBM development and the discharge of this water threatens lands in southeastern Montana with absolutely no plan to restore it. (19)

Response: The Water Quality Act does not address reclamation of CBM developed lands. The Board of Oil and Gas and BLM statutes address reclamation.

47. I do not want the permit to be granted for discharge of treated produced water from coal bed natural gas wells owned by Powder River Gas, LLC, to the Tongue River in Bighorn County, Montana. (21)

Response: State and federal regulations set forth criteria for which a permit issued under the National Pollutant Discharge Elimination System (NPDES) may be terminated or denied [ARM 17.301363 and 40 CFR 122.64]. Also, please see response to Comment 13.

48. Due to the continuous droughts and due to the ongoing negotiations with DNRC and Wyoming over the Yellowstone Compact, we may be lowering the level released from the reservoir. Today the natural flow of the Tongue River is 40 cubic feet. I have approximately ten days of water left. That is recently purchased Compact water of the Northern Cheyenne so I can run at 100 cubic feet. Unless the flow increases or the Northern Cheyenne Tribe is willing to donate some of their compact water, I will lower the dam down to the natural inflow that has been as low as 36 cubic feet in the last few days. (30)

Response: Appendix I in the Statement of Basis summarizes the low flow statistics for the receiving water. Because flow in the river is regulated by the reservoir a statistically derived 7-day, 10-year low flow value cannot be accurately calculated. The Department based its analysis on recent data and the Operating Plan for the Tongue River Reservoir. Because the permit requires that water quality standards for Electrical Conductivity and SAR be met in the effluent prior to discharge into the receiving water beneficial uses will be protected even during periods of extended low flow.

49. The last couple of winters we have a fault line that runs fairly north and south through the lake. This development will take place on the north side of that. Will that increase the venting in the lake? (30)

Response: This comment was addressed in the response to comments in the Environmental Assessment.